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# Review of 1989 South Coast Salmon Troll Fisheries

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by

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## ABSTRACT

Ryall, P. J. and T. F. Shardlow. 1991. Review of 1989 South Coast salmon troll fisheries. Can. Manuscr. Rep. Fish. Aquat. Sci. 2102: ix+87 p.

British Columbia troll fisheries south of Cape Caution were intensively managed for the fifth consecutive year in 1989. In-season management actions were designed to keep catches of each salmon species within prescribed limits while allowing each fishery to remain open for as much of the season as possible. Troll fisheries in the Strait of Georgia, on the West Coast of Vancouver Island and in Johnstone Strait were managed with combinations of partial and total area closures and periods of non-retention and non-possession for certain salmon species and fisheries. Salmon catches in the Strait of Georgia did not exceed catch ceilings or allocations. The chinook catch for the Strait of Georgia in 1989 of 28,120 fell just short of the 31,000 catch ceiling. The catches for sockeye and pink salmon were 5% and 10% over their respective allocations. Salmon catches were within the prescribed limits on the West Coast of Vancouver Island. Chinook catch for the West Coast was only 201,787. This shortfall was due to an lack of abundance and also to implementation of total closures on the West Coast. These closures were implemented to slow the coho catch rate. The final coho catch was 1.932 million, which is just slightly below the catch ceiling of 1.935 million. Sockeye and pink salmon catches were 1.43 million and 2.82 million, respectively. The allocation of sockeye for the outside troll was 10.0% of Canadian TAC. They actually caught 11.8%. Similarly for southerly migrating pink salmon, outside trollers slightly exceeded their allocation of 29% and actually obtained 31.6%.

Key words: Pacific salmon, troll fishery management, southern British Columbia.

## RÈSUMÈ

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En 1989, pour la ciquiéme annèe consècutive, la pêche á la traıne en Colombie-Britannique, au sud du Cap Caution, a ètè ètroitement surveillèe. Pendant la saison de pêche, les mesures de gestion visaient á faire respecter les limites prescrites pour chaque espéce de saumon, tout en permettant á chaque secteur de pêche de rester ouvert le plus longtemps possible. La pêche á la traıne dans le dètroit de Gèorgie, sur la côte ouest de l'ıle Vancouver et dans le dètroit de Johnstone a ètè contrôlèe grâce á des fermetures totales et partielles et á des pèriodes de non retenue et de non possession pour certaines espéces de saumon et d'autre poissons. Les prises de saumon dans le dètroit de Gèorgie n'ont pas dèpassè les limites ou les contingents permis. En 1989, les pêcheurs ont pris 28 120 quinnat dans le dètroit de Gèorgie, alors que la limite permise ètait de 31 000 quinnats. Les pêches de saumon rouge et de saumon rose ont ètè respectivement de 5% et de 10% au-dessus des limites permises. Sur la côte ouest de l'ıle Vancouver, les prises de saumon ont ètè dans les limites prescrites, se chiffrant á seulement 201 787 quinnats. Ce nombre moins èlevè ètait dû á un stock peu abondant, ainsi qu'á l'imposition de fermetures totales sur la côte ouest. Ces fermetures avaient pour but de rèduire le taux de prise de coho. Le nombre total de cohos capturès a ètè de 1,932 million, ce qui est lègèrement sous la limite permise, qui est de 1,935 million cohos. Les prises de saumon rouge se sont èlevées á 1,43 million, alors que celles du saumon rouge ètaient de 2,82 million. Les prises des pêcheurs á la traıne ètrangers ont ètè de 11,8% du total des prises admissibles au Canada, alors que leur allocation de saumons rouges ètait 10%. Ils ont ègalement dèpassè lègèrement leur allocation de 29% du total des prises admissibles pour le saumon rose migrant vers le sud, ayant capturè 31,6 % dde ce total.

Mots clès: Saumon du Pacifique, gestion de la pêche á la traıne, sud de la Colombie-Britannique.

# 1.0 INTRODUCTION

As in previous years, troll fisheries in southern British Columbia were actively managed by the Department of Fisheries and Oceans (DFO). Prior to 1985 the troll fishery was not managed on an in-season basis (Shardlow et al. 1986; Argue et al. 1987). Active in-season management was primarily due to the continuation of salmon catch ceilings and allocations for the troll fishery (Table 1A, 1B, Appendix 1). Catch ceilings for chinook and coho salmon were a requirement of the Pacific Salmon Treaty. As in previous years, salmon allocation has been based on historic cycle year averaging and, since 1985, on recommendations provided by industry groups. No consensus was achieved among industry groups which were represented by the Commercial Fishing Industry Council (CFIC) in 1989, and therefore no recommendations were provided to the Minister. Consequently, the Minister of Fisheries decided allocation percentages among user groups in 1989 (Appendix 1).

Detailed fishing plans were developed in consultation between industry and DFO fishery managers (Appendices 2 and 3). Advisory committees consisting of fishermen, industry representatives and DFO personnel developed the initial fishing plans prior to the 1989 fishing season. This report documents the 1989 troll fishing plans for southern British Columbia (waters south of Cape Caution, Fig. 1), in-season management actions and resultant catches in pieces for three troll fisheries: Strait of Georgia (historically known as Gulf of Georgia, Statistical Areas 13 to 18 and 29), West Coast of Vancouver Island (WCVI, Areas 21 to 27, 121 to 127 and 130-1) and Johnstone Strait (Areas 111, 11 and 12). Statistical Areas for southern British Columbia are shown in Figure 1.

## 1.1 SOURCES OF CATCH DATA

Catch data in this report are provided by two time frames: in-season and post-season.

(a) In-season

First, in-season catches are provided by the In-season Catch Monitoring Program (ISCMP) (Webb et al. 1983), on water hails and by a survey of west coast fish buyers (described in the following section). All three sources of information are used to make management decisions during the season. These catch figures are provided each week during the fishery, and are continually updated through the course of the season. These catch figures attempt to capture the actual catch date versus the date when the catch was landed.

(b) Post-season

The second catch data source is provided by sales slips (B.C. Catch Statistics, 1990). In this report, the sales slip estimates are catches as provided by sales slips received up to May 23, 1990.

### 1.1.1 COMPANY LANDING SURVEY

Since 1985 the south coast troll fisheries have undergone major changes. Season length for the last three years have averaged 64 days, whereas, in the early 1980's the season was about 175 days. There has also been an increase in the ability of trollers to catch sockeye and pink salmon. These changes, in addition to the catch ceilings placed upon troll catches of chinook and coho salmon in 1985, have meant that catch information needed to be compiled and processed at a much faster rate than in earlier years. However, existing programs have not been designed to adequately deal with the problem of obtaining timely catch data. Consequently, in 1988 a program designed to survey the landings of the major west coast Vancouver Island processors of salmon was developed and put into operation the same year. This program was found to be very helpful in managing the 1988 season and it was decided to continue the program for 1989.

The program involves a telephone survey of all the major buyers of troll caught salmon from the west coast of Vancouver Island. Sale slips (B.C. Catch Statistics) from the years 1984 - 87 identified which companies were the major buyers. The buyers were contacted at the beginning of each week during the fishery to collect their total landings to date. Companies surveyed in the 1988 and 1989 season represented 80-85% of the total salmon landed by west coast Vancouver Island trollers.

In-season catch is calculated by the following equation:

$$CATCH_s = \frac{\sum_i LANDWT_{si}}{\sum_i P_{si} \times AVGWT_s} \times LAG$$

where:

CATCH = catch in pieces
LANDWT= landed weight
AVGWT = average weight of species s
P = proportion of the total landed weight each company bought in a previous year or combination of years
LAG = factor to account for fish caught but, still on board a boat
s = species
i = company

While an individual company's proportion fluctuates among years and weeks, there is little variation in the total proportion ($P_{si}$) of catch bought by the major companies in the survey.

A factor that must be taken into account is the difference between fished landed by freezer boats (dressed head-off) and ice boats (dressed head-on). The dressed head-off landings are converted to dressed head-on landings by multiplying dressed head-off weight by 1.1 (A. Leal, B.C. Catch Statistics, per. comm, 1991). One final adjustment is required prior to producing an estimated catch for the season to date. This adjustment is termed "lag" and represents the amount of salmon that were caught, but have not been delivered. This factor is determined based upon past delivery patterns of ice and freezer boats. No quantitative measure of lag has been made and its determination relies heavily upon the experience of the fishery managers. Average weights are supplied during the season.

The catch of coho on the WCVI was estimated to be 728,000 for the week 7/1 by the Company Landing Survey. In comparison the ISCMP estimated the catch to be 528,000 for the same time period (Fig. 2). The value of operating a simple cost effective program like the company survey was shown to be very worthwhile in 1989. Early detection of high coho catch rates meant that managers were able implement closures which paced the fishery until mid-September in order to meet one of the major objectives outlined in the 1989 fishing plan. The company survey tracked the actual catch very closely until near the end of the season. In contrast ISCMP under estimated catch until early August (Fig. 2). In late August, however, the Company survey was over-estimating catch. By the end of August enough coho sale slips had been accumulated that reliance upon the Company Landing Survey was no longer required.

The reason for this late season over-estimate by the Company Survey was probably due to over-estimating the amount of fish remaining on board fishing vessels (i.e. lag). To improve the Company Landing Survey future work would focus upon delivery patterns of ice and freezer vessels throughout a number of seasons in order to improve the lag factor estimates.

## 1.2 ALLOCATION GOALS

Commercial salmon fishing plans in 1989 reflect the departmental goals of meeting escapement targets while harvesting available surpluses in a manner that ensures international and domestic allocations are achieved. In 1989 CFIC (body responsible for recommending domestic allocation goals) was not able to come to any consensus concerning commercial allocation goals. As a result the Department of Fisheries and Oceans was asked by the Minister to develop recommendations on allocation. Many factors were involved in developing an allocation plan and these include the views of industry representatives, historic cycle year allocations and catches and economic performance of each gear type. With these concerns and others in mind, the Department drew upon objectives established by the industry in 1988 (Shardlow, 1988; Appendix 4) to guide allocation decisions for 1989. It should be noted that since sockeye and pink allocations were in percentages, the actual numbers of fish allocated to troll were adjusted during the season as run size estimates were updated.

# 2.0 STRAIT OF GEORGIA TROLL

## 2.1 BACKGROUND AND DEVELOPMENT OF FISHING PLANS

The 1989 Strait of Georgia troll fishing plans were drawn up in pre-season meetings with the Inside Troll Advisory Committee (ITAC) which consisted of members of the Gulf Trollers Association and United Fishermen and Allied Workers Union (UFAWU). ITAC was formed in 1986 to represent the concerns of trollers in the Strait of Georgia.

The 1989 season was scheduled from July 1 to September 30, with a chum only fishery during the fall. Management goals included achieving chinook allocation and maintaining harvest rates of coho, obtaining the allocation of sockeye salmon with minimum non-retention periods, and completing pink allocation primarily from Fraser River stocks. The 1989 salmon allocations to trollers in the Strait of Georgia as defined by the Minister of Fisheries are listed in Table 1A. See the fishing plan details for area closures in Appendix 2.

### 2.1.1 Chinook

In 1989 the catch ceiling was set at 31,000 chinook for Gulf trollers (Table 1A). The 1989 catch ceiling was based upon a continuation of the 20% harvest rate reduction over the 1987 level. This harvest rate reduction was first introduced in 1988. The size limit of 62 cm fork length, adopted in 1986 (Shardlow et al., 1988), was continued (the 1985 size limit was 54 cm fork length). Barbless hooks, first introduced in 1986, were not required during periods of chinook non-retention in 1989. If the chinook ceiling was reached sooner then early August, measures would have been implemented to minimize shaker mortality.

### 2.1.2 Coho

Coho fishing plan negotiations with the Inside Trollers proceeded smoothly in 1989. While there is no catch ceiling on coho the goal is not to increase harvest rate levels from recent years. Therefore, in 1989 Inside Trollers were restricted to the traditional effort levels of July 1 to September 30.

### 2.1.3 Chum

The chum allocation for Strait of Georgia trollers was 1% of TAC or 5,000 - 6,000 pieces (Table 1A). Troll fisheries were likely to occur after late September with equal fishing time but different periods each week following the net fisheries.

### 2.1.4 Sockeye & Pink

The pre-season forecasts of run size for Fraser River sockeye and pink salmon were 13 and 17 million, respectively. These forecasts and other factors are used to determine the commercial catch allocations for Canadian and United States fishermen.

The determination of Inside Trollers' allocation for sockeye and pink salmon is based upon a percentage of the Canadian TAC. For a complete description of the Canadian and United States TAC determination see the report by the Fraser River Panel on the 1989 Fraser River sockeye and pink salmon fishery (Pacific Salmon Commission, 1990).

Sockeye allocation as recommended by the Minister was 2% (142,000 pieces pre-season) of the expected Canadian total allowable catch of Fraser River sockeye (Table 1A). Retention of sockeye was to be coordinated with the first seine opening in Johnstone Strait, expected July 16. Trollers were to be permitted to fish in net areas of Johnstone Strait and off the Fraser River. Trolling was to be conducted at equal time but different periods from nets each week after net openings. Sub-areas were to be adjusted if necessary to pace the sockeye catch in order to allow a full sockeye retention fishery during the pink season. In addition, a sub-committee of ITAC decided to retain about 10,000 pieces from the total sockeye allocation until the pink fishery began. This hold-back was to help ensure that there would not be a sockeye non-retention and non-possession fishery during the pink salmon fishery.

The catch allocation of pink salmon for Inside Trollers is a percentage of southerly migrating pink salmon, with the major component consisting of Fraser River stocks. The Strait of Georgia troll catch allocation for pink salmon was set at 4% (416,000 pieces pre-season; Table 1A). Pink retention was permitted from July 1 until the allocation was reached. The catch to August would be from study area stocks and was expected to be minimal. The main abundance of pink salmon would be Fraser River stocks arriving in mid-August.

In 1989, fishing plans were designed to achieve one major goal. This goal was to attain the catch allocations, ceilings or harvest rate guidelines while keeping non-retention fisheries at a minimum.

## 2.2 CATCH AND IN-SEASON ACTIONS FOR STRAIT OF GEORGIA

### 2.2.1 Chinook

Trolling for chinook began as scheduled on July 1 and continued uninterrupted until the season ended as scheduled on September 30 (Table 2). The actual chinook catch as determined by B.C. Catch Statistics was 28,120 pieces, which was 2,880 pieces less than the ceiling of 31,000 pieces (Table 3). No closures were implemented in 1989 to moderate the pace of chinook fishing (Table

2). These results, coupled with previous years returns, indicate a continued low abundance of chinook in the Strait of Georgia.

### 2.2.2 Coho

Coho trolling continued uninterrupted until September 30 when the main Gulf fishery closed as scheduled (Table 2). The final catch was 71,846 pieces (Table 3). In the last ten years only 1983 (57,938) and 1981 (63,867) had lower recorded catches of coho in the Strait of Georgia by Gulf Trollers. Recent stock assessments by Department of Fisheries and Oceans biologists indicate that the escapement and catch of many Strait of Georgia wild coho stocks are declining at a disturbing rate. Exploitation rates on east coast of Vancouver Island and lower Fraser River hatchery coho stocks have averaged close to 80% percent over the period 1985-1988. These exploitation rates are considered to be about 10% higher than the rate that would produce the maximum sustainable yield (Anon., 1990). Currently, a review is under way in consultation with advisory groups to decide upon the appropriate course of action in order to rebuild these stocks to historic levels.

### 2.2.3 Sockeye

Sockeye concerns dominated troll management activities for most of the season. The numerous time and area closures implemented are summarized in Table 2. The corresponding in-season troll catch estimates are summarized in Table 4. For the most part, the sockeye fishery followed the general outline provided in the pre-season plan (Appendix 2). Sockeye opened to trolling on July 17 and closed on September 30. During this time, the run size was upgraded by the Pacific Salmon Commission (PSC) from 13 million to 20 million on August 18; then downgraded to 19 million August 22. This increased the allocation of sockeye for inside trollers to 255,000 pieces. Due to a rapid decline in sockeye catches in Juan de Fuca and Johnstone Strait during the week of August 27, the Fraser River Panel of the PSC further decreased the estimate of sockeye run size to 18 million fish on September 1. Two further minor adjustments to the run size occurred in 1989. On September 8 the run size was adjusted to 17.8 million and then on September 29 the run size was increased to 18 million. The various up-grades and down-grades to run size and the subsequent allocation made it difficult to manage the fishery so as to achieve the goal. Even so the final catch of 254,428 was within 5% of the allocation goal for Inside Trollers (Table 1A).

### 2.2.4 Pink

Pink fishing began July 1 and continued until September 16 (Table 2). Estimates of the Fraser River pink salmon run size changed over the course of the season. Moderate catches and low CPE's (catch per effort) during the week of August 27 caused the Fraser River Panel of the Pacific Salmon Commission to reduce the estimated run size to 13 million from 17 million. As the catches were better than expected during the week of September 3 the Fraser River Panel revised the run size to 15 million pink salmon (allocation 376,000 pieces). As a result of the run size upgrade inside trollers now required a large pink salmon

catch of about 160,000 pieces to achieve their allocation. The remaining allocation was estimated to have been achieved by September 9 with the trollers catching about 411,000 pieces. As a result, pink salmon retention by Inside Trollers was prohibited, from September 16 to season closure. A rapid decline in pink salmon abundance caused the run size to be downgraded to 14 million. The final pink salmon allocation was 369,000 for a run size of 14.5 million (Table 1A). As with sockeye the revisions to run size presented management difficulties in achieving the pink salmon allocation goal for inside trollers.

### 2.2.5 Chum

As in most years, the chum catch was low in 1989 and no action was taken to limit harvest of this species during the regular season. Equal time chum fishing was shared among net gear and trollers. Post-season catch estimates show 7,767 pieces were taken. This catch represents 1.3% of the TAC, or slightly over the goal of 1.0%.

### 2.2.6 Summary

The Strait of Georgia troll season started July 1 and continued until September 30. Final 1989 troll catches are compared to post-season sockeye and pink allocations and chinook catch ceilings in Table 1A. The chinook catch was 9.5% less than the ceiling. Pink and sockeye allocations were altered several times throughout the season responding to changes in estimated run sizes. Post-season catch estimates show that the inside trollers allocation of sockeye was 2.0% and they actually landed 2.1%. Similarly the goal for pink salmon was 4.0% of the Canadian TAC and they actually landed 4.4%.

## 2.3 STRAIT OF GEORGIA TROLL GEAR COUNTS

Aerial counts of trollers fishing in the Strait of Georgia were made throughout the 1989 season to enable timely catch estimation (Table 5). As has been done in previous years troll counts were conducted in conjunction with the Georgia Strait creel survey flights (Shardlow and Collicutt, 1989). The flights cover a distance from Sheringham Point off Victoria to Granite Point north of Campbell River (Figure 3). All troll gear sighted were recorded by statistical area. There were 32 such flights during the 1989 troll season from July 1 to September 30. Though the daily maximum number of vessels observed fishing was 165, 224 vessels were licensed as Inside Trollers in 1989. Effort counts, in combination with catch per unit effort estimates obtained by ISCMP samplers and Fishery Officers conducting on-water hails of trollers, were used to estimate in-season catch estimates.

# 3.0 WEST COAST VANCOUVER ISLAND TROLL

## 3.1 BACKGROUND

The 1989 West Coast Vancouver Island (WCVI) troll fishing plans were drawn up in pre-season meetings with the Outside Troll Advisory Committee (OTAC). OTAC was formed in 1986 to represent the concerns of WCVI trollers and consisted of representatives from the Pacific Trollers Association (PTA), Native Brotherhood, Northern Trollers Association (NTA), United Fishermen and Allied Workers Union (UFAWU), Pacific Seafood Council and Fisheries Council of B.C. (FCBC).

WCVI management goals for 1989 were directed towards keeping troll harvest of chinook and coho within the catch ceilings specified by the Pacific Salmon Treaty (see table 1B). Other goals included obtaining domestic allocation targets for Fraser River sockeye and southern bound pink, while maintaining undisrupted fisheries and maintaining or increasing the economic benefits to the troll fleet and coastal communities. The chinook catch ceiling of 360,000 was reduced to 309,000 due to previous overages in 1988 and 1987. The coho catch ceiling was set at 1.8 million pieces, and an additional 135,00 pieces was added when CPE estimates indicated a high coho abundance existed. The additional 135,000 was due to a shortfall in the 1988 catch. The Pacific Salmon Treaty allows for a make-up catch of 7.5% in addition to the catch ceiling, in the succeeding year due to coho or chinook catch underages. The sockeye allocation was 10% of Canadian TAC or 707,000 pieces pre-season. The pink allocation remained at 29%, or 3,016,000 pieces estimated pre-season. Achievement of the catch ceilings and allocations was to be done with the minimum of non-retention fisheries during the season. The season would be extended to mid-September and was to be managed by red and green line catches in the case of chinook and coho.

## 3.2 DEVELOPMENT OF FISHING PLANS

OTAC met three times (January 16, April 6 & 7, and April 21 & 22) in early 1989 to discuss different fishing plans for the up-coming season. Catch ceilings coupled with the understanding that the troll season and fishing areas were to remain similar to recent years, provided a framework for WCVI fishing plan discussions. Also considered, was DFO's desire to avoid, where possible, non-retention fisheries due to the disruptive effect of high shaker catches on fish stocks. Other objectives to aid in the guidance of the 1989 troll fishing plan are listed in Appendix 4.

The resultant fishing plan consisted of:

1) An opening date for chinook, coho, sockeye, pink and chum of July 1 and fishing was to continue to mid-September unless the catch ceilings/allocations were achieved prior to this time. If the catch

ceilings/allocations were not achieved the fishery would continue until September 30, 1989 when all trolling would close for the balance of the season.

2) Minimum size limit of troll caught chinook remained at 67 cm fork length, or 56 cm for the "head off" length.

3) Management of chinook and coho fisheries was conducted by maximum catch guidelines called red line catches. The season commenced with the maximum number of chinook closures in place to slow the catch rate of chinook, (thereby minimizing non-retention fisheries, and disruption).

5) Swiftsure Bank closure was modified for 1989. Area S remained closed in accordance with the Pacific Salmon Treaty (Figure 1), unless required to catch the pink or sockeye allocation. A new area, "G", (previously part of Swiftsure, Figure 5) has been defined to allow access to pink and sockeye.

Further details of the 1989 WCVI troll plan are available in the Salmon Troll Fishing Plan (Appendix 3).

### 3.2.1 West Coast Troll Model

At OTAC meetings, prior to the 1989 troll season, simulations of various fishing plans were made with the West Coast Troll Model (English et al. 1987). These simulations were used as an aid in evaluating the relative benefits and costs of the various proposed fishing plans (Appendix 5).

The basic fishing plan called for an opening date of July 1 and closure on September 30 or at attainment of the catch ceilings. All simulations assumed fishing for chinook, coho and chum would commence July 1.

### 3.2.2 Red Line Catches

As was done previous seasons, it was agreed that WCVI chinook and coho fisheries would be managed so as not to exceed weekly maximum catches known as red line catches (Figures 4 and 5). The objective was to conduct a fishery starting July 1 for chinook and coho that would allow catch ceilings to be achieved by the end of statistical week 9/2 thus avoiding the need for non-retention fisheries. If catches exceeded the red line values, then restrictions (e.g., area closures) would be imposed until catches were restored to the ideal level. The proportions by which red line catches exceeded ideal catches were larger at the beginning of the season than at the end for two reasons. Firstly, higher than ideal catches could be compensated by management action with greater ease early in the season than similar catches later in the season. Secondly, confidence about catch estimates tends to increase later in the season as more sampling data becomes available. That is, there is less certainty in the accuracy of early catch estimates than catch estimates later in the season and larger early season red line percentages reflect this uncertainty. Similarly, if the catch rate was less than expected then management would take action to increase the catch rate.

chinook

The modelling exercise forecasted that trollers would not attain their chinook catch allocation during the 1989 season. An important model input is an estimate of abundance. As this input parameter is very uncertain a sensitivity analysis was conducted. By increasing the estimated chinook abundance by 10% the catch ceiling was still not attained. However the simulated catch did increase from about 260,000 to 300,000. The model's predictions and actual chinook catch in 1989 are in close agreement (Appendix 5).

coho

The 1989 catch ceiling for WCVI troll caught coho was established at 1.8 - 1.935 million pieces. Expectations for 1989, based on the previous years averages, estimated a catch close to 1.8 million pieces reaching the ceiling at week 9/2. The ceiling was reached under a wide range of possible fishing scenarios and model inputs. In contrast to the chinook prediction, the actual coho catch proceeded at a rate much greater than the model's prediction (Appendix 5). This was due to the much larger coho abundance in 1989 than was anticipated in the fishery. In 1989 there was no methodology in place to predict coho abundance for the coming season. Partly for this reason and also to obtain chinook abundance estimates on the west coast of Vancouver Island a test fishery was initiated prior to the 1990 fishing season.

sockeye, pink and chum

Only a short time period is needed for trollers to harvest their sockeye and pink allocations and the allocations could change in-season, due to run size revisions. Therefore, these species were not managed using red line catches. For chum salmon no specific allocation was made.

## 3.3 CATCH AND IN-SEASON ACTIONS FOR WCVI

In-season actions are based on a comparison of in-season catch estimates. The in-season management actions for the WCVI troll fishery are summarized in Table 6. Weekly catch of species and days fishing as reported in sales slips are presented in Table 7, and the in-season catch estimates are summarized in Table 8.

### 3.3.1 Chinook

Trolling for chinook began as scheduled on July 1. Chinook catch rates were low throughout the season and continually below the Green Line during the season (Figure 4). Even though catch rates were below the Green Line no Chinook Conservation Areas (CCA) were opened as was called for in the Troll Fishing Plans. The CCA can also be productive coho fishing grounds. Consequently, these areas remained closed in order to slow the unanticipated high coho catch. The estimated catch as determined post-season for chinook was 202,000, or about 35% under the WCVI troll catch ceiling of 309,000.

### 3.3.2 Coho

In-season catch rates were extremely high throughout the 1989 season. The troll fishery experienced two total closures and a number of large area closures. The major factor for the closures from July 14 to August 6 was to slow coho catch rates so as to avoid a coho non-retention period during the sockeye and pink fisheries. Even with all the area closures in effect the coho catch continued to exceed the red line level throughout the season (Figure 5). However, the total closures and local area closures (Fig. 6-9) were successful in allowing coho retention until the end of the sockeye fishery.

Areas 121-127 and inside the surf line were closed to all species during the week of July 14 - July 19 to slow coho catch rates. At the time of closure, (statistical week 7/2) in-season catch estimates indicated a coho troll harvest of 1,100,000 (post-season estimate is 1,188,000; see Table 8 "chosen"). This exceeded the red line value by approximately 500,000. On July 20 a corridor along WCVI, approximately along the 50 fathom line shoreward to the surf line, was closed (Figure 6). At the same time coho allocation was increased to 1.95 million due to a higher than expected abundance as the pre-season plan directed. This closed corridor was reduced in area July 27 to exclude CCA D and waters shoreward (Figure 7), then on August 2 to exclude CCA C and waters shoreward and north of Estevan Point (Figure 8). These openings were intended to increase sockeye opportunities. All areas were closed on Aug 6 to all trolling, including areas 21-27 and 121-127, to avoid coho non-retention when pink abundance increased. This closure remained in effect until Saturday, August 12. The coho catch from August 13 to August 19 was about 250,000 bringing the total to 1.87 million (Table 8). Figure 9 shows areas closed during this period. The coho catch rate dropped considerably by August 19 as most effort switched to sockeye salmon. The season closed on August 27 with total estimated catch at 1,950,000.

### 3.3.3 Sockeye

Sockeye opened to trolling on July 1, and experienced the same closure periods as other species in the fishery until August 11 (Table 6). Cumulative sockeye catch to August 5 based on in-season estimates was 860,000, which indicated the outside troll allocation had been reached. Sockeye catches in the Area 123 troll test fishery were high (average of approximately 300 per vessel day) during the week of August 12 to 19. The PSC upgraded the Fraser River sockeye run size from 13 million to 20 million on Friday August 18. Nearly all of this increase (except for 300,000 allocated to escapement) went to the Canadian TAC. The allocation for the outside troll consequently increased from 707,000 to nearly 1.4 million, which resulted in a remaining balance of approximately 550,000 to be caught.

In response to the PSC upgrade of the Fraser River sockeye run to 20 million, DFO quickly announced that most of the WCVI would reopen to trolling for sockeye. However, the open areas were not restricted to the restart procedure as outlined in the pre-season fishing plan. In response to the size of the new catch allocation and the widespread abundance of sockeye in the troll test

fisheries, all the WCVI above the "960 line" (Areas F1 and F2) opened to trolling. Area G remained closed and Area 12 was open only during net times; no trolling was permitted below the "960 line" to avoid potentially large coho catches. Area G was opened on August 23 due to dropping sockeye catch rates.

By August 24, the allocation of sockeye was reduced to 1.215 million. It was estimated the outside troll sockeye allocation would be achieved late in the week as would the coho catch ceiling. Consequently, trolling for both sockeye and coho closed August 27.

### 3.3.4 Pink

The run size for Fraser River pink salmon also experienced adjustments similar to sockeye in-season. The Fraser River run size was first down-graded from 17 to 13 million (allocation 2.3 million southern bound pink salmon) on September 1. Based upon catch projections of 2.37 million southern bound pink salmon by September 1, it was decided to close WCVI to all trolling September 3. A 48 hour closure notice was put in place to allow industry enough time to plan an orderly shutdown of the fishery. Subsequent to the closure, the Pacific Salmon Commission on September 8 upgraded the Fraser River pink Salmon run size to 15 million. This set the outside troll allocation at 2,724,000 and therefore an additional 450,000 pinks remained to be caught by outside vessels. This increase required a restart of the troll pink fishery as per the pre-season plan. Consequently, a plan was put in place to reopen the fishery on September 11 until at least September 15. During the restart fishery, the pink run size was decreased from 15 to 14 million (troll allocation 2,509,000) Since the Canadian TAC of pink at this run size had been achieved, the Fraser River Panel closed Area 20 effective September 11. Trolling in Area G, 11 and 12 closed as scheduled at midnight September 15. Effort in the pink restart fishery was low.

### 3.3.5 Summary

In 1989, the WCVI troll fishery opened July 1, and experienced two total closures and a number of large area closures. Table 6 provides a summary of action taken in the troll fishery and Figures 6 - 9 depict the major area closures during the 1989 troll fishery. Actions during July 14 to August 6 were to slow coho catch rates so as to avoid a coho non-retention period during the sockeye and pink fisheries. These actions were taken after consultation with advisors from the in-season OTAC committee.

The sockeye run size had two major revisions during the season. First on Aug 18, the run was upgraded to 20 million from 13 million, then downgraded to 19 million on August 23. Following the troll season closure for sockeye, this species underwent further run size revisions as better information became available. The final run size estimate was 18.5 million. The sockeye salmon end-of-season allocation for outside trollers was 1.215 million pieces.

The Fraser River pink salmon also experienced similar adjustments in-season. The run size was down-graded from 17 to 13 million on September 1, then up-graded on September 8 to 15 million. The WCVI pink fishery restarted on

September 11, based on this up-grade, but during this restart fishery, the pink run size was down-graded to 14 million. WCVI troll closed to all trolling September 15.

### 3.4 WCVI TROLL GEAR COUNTS

Aerial counts of trollers fishing the WCVI were made throughout the 1989 season to help provide more timely estimates of troll effort which, in conjunction with CPE estimates obtained by dockside samplers and on-water "hails", was used to generate in-season estimates of troll catch. In 1989 troll counts were obtained only from Department of National Defence (DND) regularly scheduled tracker flights. In previous years DND flights were supplemented with flights chartered by DFO when necessary. Aerial overflights counts for the southwest of Vancouver Island were augmented by radar counts. Vessel counts from aerial overflights only are presented in Table 9.

## 4.0 JOHNSTONE STRAIT TROLL

### 4.1 SUMMARY

Fishing in Johnstone Strait is mainly by net gear. Therefore, as in previous years, troll management actions in 1989 were dictated by concerns for net species and net fleet activities. Consequently, Johnstone Strait trollers were not assigned catch ceilings, but rather had their Johnstone Strait catches assigned to other catch ceilings or allocations. For example, chinook caught in Areas 111 and 11 were assigned to the North Coast catch ceiling, chinook caught in Area 12 by Outside Trollers to the WCVI ceiling, and chinook caught in Area 13 to the Strait of Georgia catch ceiling. Assignment of species to catch ceilings was as follows:

| Stat. Area | Chinook | Coho | Pink | Sockeye | Chum |
|---|---|---|---|---|---|
| 111, 11 | North Coast | No ceiling | WCVI | WCVI | WCVI |
| 12 | WCVI | No ceiling | WCVI | WCVI | WCVI |
| 13 | Georgia Strait | No ceiling | Georgia Strait | Georgia Strait | Georgia Strait |

Table 10 summarizes the management actions taken in the 1989 Johnstone Strait troll fishery. Trolling was permitted from July 1 to September 15, as per the pre-season plan. Catch results from sales slip records are shown in Table 11, and are as follows: Pink accounted for the largest catch by season-end, at 260,758, followed by sockeye at 213,454, coho at 42,051, chinook at 1,775 and chum at 6,491. Figure 7 compares cumulative catch rates, and shows pink and sockeye catch rates were much higher than chinook, coho and chum.

## 4.2 AREA 10 AND 11 CHINOOK CONSERVATION ACTIONS FOR LOWER GEORGIA STRAIT

In 1988 the Department initiated, at the Ministers request, a conservation plan for the lower Strait of Georgia chinook (LGS) stocks). The plan involved all major fisheries impacting on LGS chinook and called for a 20% reduction in harvest rate. The harvest rate reduction was translated into a 20% reduction in catch assuming that abundance and mortalities associated with fishing remain the same as in a base period. For upper Johnstone Strait and Lower Central Coast the base period chosen was 1985 to 1987. The average catch during this period for Areas 10, 11, 111 and 110 was 24,102. A 20% reduction in this catch will produce a catch of about 19,000. In 1988 the catch ceiling for the above mentioned areas was set at 19,000. In 1989 the ceiling was increased to 21,000. In addition, some areas were closed completely to trolling in Areas 10 and 11 (see Appendix 3) with the exception of certain portions of the fishing grounds left open for access to pink and sockeye during the period of the fishery directed at these species.

## 5.0 ACKNOWLEDGEMENTS

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# TABLES

Table 1. Summary of pre and post–season catch ceilings/allocations and catches for the 1989 South Coast Troll Fishery.

Table 1A.

| Strait of Georgia | | | | | |
|---|---|---|---|---|---|
| Species | % of TAC | Allocation / Ceiling | | Actual Catch | |
| | | pre–season | post–season | Pieces | % of TAC |
| Chinook | ceiling | 31,000 | 31,000 | 28,120 | – |
| Coho | – | No Ceiling | – | 71,846 | – |
| Sockeye | 2% | 142,000 | 243,000 | 254,428 | 2.1% |
| Pink | 4% | 416,000 | 369,000 | 411,440 | 4.4% |
| Chum | 1% | 5,000 – 6,000 | 5,870 | 7,767 | 1.3% |

Table 1B.

| West Coast Vancouver Island | | | | | |
|---|---|---|---|---|---|
| Species | % of TAC | Allocation / Ceiling | | Actual Catch | |
| | | pre–season | post–season | Pieces | % of TAC |
| Chinook | ceiling | 360,000 | 360,000 | 201,787 | – |
| Coho | ceiling | 1,800,000 | 1,800,000 | 1,932,507 | – |
| Sockeye | 10% | 707,000 | 1,215,000 | 1,429,056 | 11.8% |
| Pink | 29% | 3,016,000 | 2,679,000 | 2,822,433 | 31.6% |
| Chum | – | historic levels | – | 28,960 | – |

Source: B.C. Catch Stats to May, 1990

TABLE 2. Summary of management actions for the 1989 Strait of Georgia troll fishery.

| PERIOD | MANAGEMENT ACTIONS | | | MANAGEMENT AREAS OPEN |
|---|---|---|---|---|
| | SPECIES OPEN | ACTION | PURPOSE | |
| July 1 to July 15 | Coho Pink Chum Chinook | Season opens with 62 cm chinook size limit. Trolling permitted 7 days per week. Use of barbed hooks permitted. | Commence season | Non-net Areas*; All Area 13 except 18-8; Area 29-5. |
| July 16 | Coho Pink Chum Chinook | Areas 18-1 and 18-11 closes to commercial trolling. | Fraser River Panel of the PSC takes control of Panel waters. | Non-net Areas; All Area 18 except 18-1, 18-8, and 18-11; Area 29-5. |
| July 17 to July 19 | Sockeye Coho Pink Chum Chinook | Sockeye opens to trolling. Some river mouth closures in effect. Barbed hooks permitted unless a chinook non-retention fishery is in effect. | Commence sockeye troll fishery on early run sockeye. | Non-net Areas; All Area 18 except 18-1, 18-8 and 18-11; Area 29-5. |
| July 20 | All species | Open portion of South Gulf for 24 hours, following net fishery. | Provide increased opportunity for sockeye fishing. | Non-net Areas; All Area 18 except 18-8; Area 29-1 to 29-6. |
| July 21 to July 27 | All species | Close Fraser R. Panel areas to trolling. | No trolling in Fraser River Panel areas except in response to gillnet openings. | Non-net Areas; All Area 18 except 18-1, 18-8 and 18-11; Area 29-5. |
| July 28 to July 30 | All species | Open net areas of Area 13 for 2.5 days (0001 hrs Fri - 1700 hrs Sat) following net opening in Area 13. | Required troll opening of equal but different time as per pre-season plan. | Non-net Areas; All Area 18 except 18-1, 18-8 and 18-11; Area 29-5; Areas 13-7 to 13-10 and 13-27 to 13-32. |
| July 31 to Aug 2 | All species | Close net areas of Area 13 | Pace sockeye fishery. | Non-net Areas; All Area 18 except 18-1, 18-8 and 18-11; Area 29-5. |
| Aug 3 to Aug 4 | All species | Open net areas of Area 13 and mouth of Fraser River. | Increase opportunity for sockeye and pink salmon. | Non-net Areas; Area 18 except 18-8; Area 29-1 to 29-6; Area 13-7 to 13-10 and 13-27 to 13-32. |
| Aug 5 to Aug 6 | All species | Net Areas of Area 13 open until 1700 hrs August 6. | Provide opportunity for sockeye and pink almon. | Non-net Areas; Area 18 except 18-1, 18-8 and 18-11; Area 29-5; Area 13-7 to 13-10 and 13-27 to 13-32. |

*Non-net Areas = 13-1 to 13-3, 13-14 to 13-20 and 13-23; all Area 14 except 14-4 and 14-11; All Area 15 except 15-6; All Area 16; All Area 17 except 17-7 and 17-14.

TABLE 2 (cont'd)

| PERIOD | MANAGEMENT ACTIONS | | | MANAGEMENT AREAS OPEN |
|---|---|---|---|---|
| | SPECIES OPEN | ACTION | PURPOSE | |
| Aug 7 to Aug 9 | All species | Continue trolling in non-net areas. | Pace sockeye fishery. | Non-net Areas: All Area 18 except 18-1, 18-8 and 18-11; Area 29-5. |
| Aug 10 to Aug 11 | All species | Open net areas of Area 13 and mouth of the Fraser River. | Increase opportunity for sockeye and pink salmon. | Non-net Areas: All Area 18 except 18-1, 18-8 and 18-11; Area 29-1 to 29-6; Area 13-7 to 13-10 and 13-27 to 13-32. |
| Aug 12 to Aug 13 | All species | Close mouth of Fraser River 2359 hours Aug. 11. | Pace sockeye fishery. | Non-net Areas: All Area 18 except 18-1, 18-8 and 18-11; Area 29-5; Area 13-7 to 13-10 and 13-27 to 13-27. |
| Aug 13 to Aug 19 | All species | Close net areas of Area 13 1700 hrs Sunday August 13. | Pace sockeye fishery. Early season catch ceiling of 132,000 reached. | Non-net Areas: All Area 18 except 18-1, 18-8 and 18-11; Area 29-5. |
| Aug 20 to Aug 22 | All species | Pacific Salmon Comm. increased run size to 20 M; therefore allocation increased to 275,000. Portion of Area 18 opened. | Increase sockeye opportunity. | Non-net Areas: All Area 18 except 18-8; Area 29-5. |
| Aug 23 | All species | Fraser River sockeye salmon run size downgraded to 19 M, therefore allocation now 255,000. Open mouth of Fraser River 0800 hrs with non-retention of chinook in Fraser River banana. | Provide increased opportunity for sockeye | Non-net Areas: All Area 18 except 18-8; Area 29-1 to 29-6. |
| Aug 24 to Aug 31 | All species | Open net areas of Area 13 and continued non-retention of chinook in Fraser River banana. | Provide increased opportunity for sockeye | Non-net Areas: All Area 18 except 18-8; Area 29-1 to 29-6; Areas 13-7 to 13-10 and 13-27 to 13-32. |
| Sep 1 to Sep 8 | All species | Fraser River pink salmon run size downgraded to 13 M from 17. Allocation now 316,000. Gulf trollers still require large pink catch to reach alloc. | Continue to provide maximum opportunity for pink and sockeye fishing. | Non-net Areas: All Area 18 except 18-8; Area 29-1 to 29-6; Areas 13-7 to 13-10 and 13-27 to 13-32. |
| Sep 9 to Sep 15 | All species | Fraser River pink salmon run size upgraded to 15 M. Close mouth of Fraser River. | Closure due to conversation concerns for Birkenhead sockeye. | Non-net Areas: All Area 18 except 18-1, 18-8 and 18-11; Area 29-5; Areas 13-7 to 13-10 and 13-27 to 13-32. |
| Sep 16 to Sep 29 | Sockeye Coho Chum Chinook | Fraser River pink salmon run size downgraded to 14 M on Sept. 13. As allocation of 346,000 reached NR and NP of pink salmon enforced. | Limit opportunity to pink salmon but, still provide fishing opportunity for other species. | Non-net Areas: All Area 18 except 18-1, 18-8, and 18-11; Area 29-5. |
| Sep 30 | | Close for balance of season at 2359 hrs September 30 as pre-season plan. | Pink and chum allocation for inside trollers achieved. No further opportunity for sockeye | |

Table 3. Weekly 1989 troll catch and days fishing for the Strait of Georgia.

| Stat Week | Chinook | | Coho | | Sockeye | | Pink | | Chum | | Troll Days |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Catch | Cum. Total | Catch | Cum. Total | Catch | Cum. Total | Catch | Cum. Total | Catch | Cum. Total | |
| 6/4 | 576 | 576 | 1,123 | 1,123 | 0 | 0 | 20 | 20 | 0 | 0 | 21 |
| 7/1 | 9,274 | 9,850 | 28,894 | 30,017 | 313 | 313 | 1,461 | 1,481 | 0 | 0 | 853 |
| 7/2 | 5,533 | 15,383 | 15,339 | 45,356 | 435 | 748 | 1,214 | 2,695 | 0 | 0 | 591 |
| 7/3 | 2,090 | 17,473 | 6,148 | 51,504 | 1,053 | 1,801 | 1,041 | 3,736 | 1 | 1 | 361 |
| 7/4 | 1,626 | 19,099 | 7,517 | 59,021 | 17,041 | 18,842 | 17,589 | 21,325 | 5 | 6 | 570 |
| 7/5 | 809 | 19,908 | 2,140 | 61,161 | 44,189 | 63,031 | 39,231 | 60,556 | 13 | 19 | 581 |
| 8/1 | 674 | 20,582 | 1,033 | 62,194 | 50,683 | 113,714 | 24,167 | 84,723 | 23 | 42 | 623 |
| 8/2 | 880 | 21,462 | 789 | 62,983 | 60,923 | 174,637 | 29,432 | 114,155 | 13 | 55 | 592 |
| 8/3 | 811 | 22,273 | 977 | 63,960 | 30,694 | 205,331 | 33,204 | 147,359 | 16 | 71 | 518 |
| 8/4 | 770 | 23,043 | 368 | 64,328 | 27,599 | 232,930 | 70,734 | 218,093 | 169 | 240 | 608 |
| 9/1 | 959 | 24,002 | 1,353 | 65,681 | 17,246 | 250,176 | 133,569 | 351,662 | 493 | 733 | 550 |
| 9/2 | 1,476 | 25,478 | 1,252 | 66,933 | 3,293 | 253,469 | 54,826 | 406,488 | 946 | 1,679 | 293 |
| 9/3 | 1,940 | 27,418 | 2,927 | 69,860 | 192 | 253,661 | 3,890 | 410,378 | 569 | 2,248 | 225 |
| 9/4 | 612 | 28,030 | 1,419 | 71,279 | 644 | 254,305 | 835 | 411,213 | 3,921 | 6,169 | 165 |
| 10/1 | 90 | 28,120 | 567 | 71,846 | 123 | 254,428 | 227 | 411,440 | 1,598 | 7,767 | 74 |
| Total | 28,120 | | 71,846 | | 254,428 | | 411,440 | | 7,767 | | 6,625 |

Notes: 1) Data Source: B.C. Catch Statistics May, 1990.
2) Catch estimates are for Areas 13–18, 29 and Area 12 catch by Inside Trollers of Sockeye and Pink Salmon.
3) Troll day estimate from Salmon Catch Database, Feb., 1990.

## Table 4. Comparison of troll catch estimates by various methodologies in the Strait of Georgia.

### CUMULATIVE

| | STATISTICAL WEEK | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7/1 | 7/2 | 7/3 | 7/4 | 7/5 | 8/1 | 8/2 | 8/3 | 8/4 | 9/1 | 9/2 | 9/3 | 9/4 |
| **SOCKEYE** | | | | | | | | | | | | | |
| ISCMP | 0 | 0 | 0 | 22,700 | 54,700 | 88,000 | 137,400 | 164,200 | 178,000 | 187,900 | 218,400 | 232,800 | 232,800 |
| UPD-ISCMP | 0 | 0 | 2,000 | 28,700 | 67,200 | 114,800 | 157,600 | 186,400 | 206,800 | 228,200 | 230,300 | 232,800 | 232,800 |
| HAILS | 0 | 0 | 1,000 | 27,500 | 57,000 | 98,500 | 138,000 | 172,000 | 188,200 | 197,900 | 204,201 | 204,215 | 204,215 |
| CHOSEN | 0 | 0 | 1,000 | 27,000 | 60,000 | 96,000 | 139,000 | 170,000 | 184,000 | 210,000 | 225,000 | 225,000 | |
| IN-SSLIPS | - | - | 42 | 314 | 14,100 | 49,500 | 82,831 | 163,000 | 178,197 | 197,236 | 230,797 | 241,328 | 242,557 |
| UPDSSLIPS | 0 | 0 | 1,982 | 23,844 | 66,298 | 115,188 | 166,866 | 189,884 | 220,805 | 240,798 | 242,648 | 242,557 | 242,557 |
| **COHO** | | | | | | | | | | | | | |
| ISCMP | 27,700 | 39,400 | 44,700 | 58,800 | 60,200 | 60,500 | 67,300 | 66,300 | 66,400 | 68,000 | 68,700 | 90,800 | 96,800 |
| UPD-ISCMP | 31,400 | 43,200 | 53,000 | 61,300 | 63,460 | 73,800 | 84,300 | 85,900 | 86,300 | 87,900 | 90,800 | 96,800 | 96,800 |
| HAILS | 34,000 | 41,600 | 48,700 | 54,300 | 54,900 | 55,400 | 58,800 | 57,000 | 57,500 | 58,000 | 60,000 | 94,183 | 95,976 |
| CHOSEN | 34,000 | 43,000 | 48,000 | 54,000 | 55,000 | 61,000 | 72,000 | 80,000 | 67,000 | 67,001 | 88,000 | 92,000 | |
| IN-SSLIPS | - | - | 34,052 | 48,383 | 49,100 | 61,100 | 65,820 | 68,877 | 70,871 | - | 66,869 | 66,888 | 67,089 |
| UPDSSLIPS | 32,493 | 45,360 | 52,985 | 59,927 | 62,079 | 63,068 | 63,828 | 64,568 | 65,141 | 66,291 | 67,018 | 67,058 | 67,089 |
| **PINK** | | | | | | | | | | | | | |
| ISCMP | 1,800 | 2,800 | 4,300 | 20,000 | 32,800 | 38,700 | 66,200 | 99,700 | 139,200 | 199,800 | 255,000 | 297,200 | 297,399 |
| UPD-ISCMP | 2,500 | 4,000 | 6,300 | 23,100 | 57,100 | 74,800 | 96,000 | 125,900 | 175,500 | 260,900 | 297,200 | 297,200 | 297,399 |
| HAILS | 1,000 | 1,400 | 2,500 | 15,800 | 23,500 | 30,000 | 66,800 | 122,900 | 167,400 | 295,500 | 333,958 | 333,958 | 333,958 |
| CHOSEN | 1,000 | 1,500 | 3,500 | 16,000 | 30,000 | 60,000 | 77,000 | 150,000 | 215,000 | 360,000 | 360,000 | 360,000 | |
| IN-SSLIPS | - | - | 1,656 | 2,758 | 12,500 | 49,500 | 69,436 | 90,411 | 151,200 | - | 274,530 | 324,977 | 326,393 |
| UPDSSLIPS | 1,535 | 2,495 | 4,616 | 21,391 | 49,565 | 76,927 | 109,415 | 156,119 | 213,100 | 301,666 | 329,293 | 329,293 | 326,393 |
| **CHUM** | | | | | | | | | | | | | |
| ISCMP | 0 | 0 | 0 | 1,200 | 1,300 | 1,800 | 1,600 | 1,800 | 1,800 | 10,700 | 11,800 | 12,100 | 14,200 |
| UPD-ISCMP | 400 | 700 | 6,900 | 8,100 | 8,500 | 9,000 | 9,300 | 9,600 | 10,000 | 10,800 | 12,100 | 14,200 | 14,200 |
| HAILS | 0 | 0 | 0 | 31 | 31 | 60 | 91 | 102 | 203 | 708 | 1,060 | 1,666 | 16,139 |
| CHOSEN | 0 | 0 | 0 | 0 | 0 | 100 | 200 | 200 | 500 | 4,000 | 5,500 | 6,200 | |
| IN-SSLIPS | - | - | 2 | 2 | 5 | 100 | - | - | 383 | - | 462 | 1,601 | 1,782 |
| UPDSSLIPS | 0 | 0 | 2 | 22 | 47 | 99 | 77 | 117 | 303 | 881 | 1,597 | 1,782 | 1,782 |
| **CHINOOK** | | | | | | | | | | | | | |
| ISCMP | 10,300 | 15,500 | 17,700 | 21,500 | 22,800 | 24,900 | 28,700 | 30,400 | 31,300 | 25,300 | 27,400 | 28,500 | 30,100 |
| UPD-ISCMP | 11,900 | 17,600 | 18,800 | 20,300 | 21,100 | 22,500 | 23,500 | 24,900 | 25,900 | 26,900 | 28,500 | 30,100 | 30,100 |
| HAILS | 15,000 | 19,000 | 19,800 | 20,900 | 21,200 | 21,900 | 22,500 | 23,030 | 23,171 | 23,378 | 24,084 | 25,063 | 25,364 |
| CHOSEN | 15,000 | 19,000 | 19,800 | 21,000 | 21,200 | 22,000 | 22,800 | 24,000 | 25,000 | 25,001 | 25,500 | 27,000 | |
| IN-SSLIPS | - | - | 10,527 | 15,709 | 16,600 | 19,009 | 19,804 | 20,884 | 22,309 | - | 23,792 | 25,057 | 25,324 |
| UPDSSLIPS | 10,881 | 15,522 | 17,864 | 19,273 | 20,056 | 20,795 | 21,658 | 22,368 | 23,273 | 24,055 | 25,229 | 25,324 | 25,324 |

NOTE:

1) ISCMP - In-season catch monitoring program
2) HAILS - on-water fishing officer hail program
3) IN-SSLIPS - In-season sale slip estimates
4) UPDSSLIPS - Post-season sale slip figure. This sales slip estimate was adjusted to reflect the time of catch and not when the catch was landed.

Table 5. Strait of Georgia troll gear count in 1989 by overflights.

| Stat Week | Date | Statistical Area | | | | | | | Daily Total | Weekly Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 13 | 14 | 15 | 16 | 17 | 18 | 29 | | |
| 6/4 | 01-Jul | 14 | 21 | 3 | 9 | 4 | 2 | | 53 | 53 |
| 7/1 | 04-Jul | 51 | 101 | 1 | 7 | 4 | 1 | | 165 | 165 |
| 7/2 | 07-Jul | 19 | 72 | 2 | 3 | 3 | 1 | 2 | 102 | |
| | 09-Jul | 18 | 47 | 1 | 5 | 5 | 3 | 0 | 79 | |
| | 12-Jul | 24 | 43 | 1 | 0 | 7 | 1 | 1 | 77 | |
| | 15-Jul | 2 | 9 | 1 | 4 | 0 | 0 | 0 | 16 | 274 |
| 7/3 | 17-Jul | 5 | 7 | 0 | 23 | 2 | 64 | 0 | 101 | |
| | 21-Jul | 11 | 30 | 0 | 2 | 6 | 0 | 0 | 49 | |
| | 22-Jul | | 4 | | | | | | 4 | 154 |
| 7/4 | 23-Jul | 4 | 28 | 2 | 0 | 0 | 0 | 0 | 34 | |
| | 27-Jul | 48 | 10 | 1 | 4 | 3 | 2 | 0 | 68 | |
| | 29-Jul | 3 | 10 | 0 | 3 | 2 | 5 | 0 | 23 | 125 |
| 7/5 | 03-Aug | 1 | 5 | 0 | 0 | 0 | 0 | 63 | 69 | 69 |
| 8/1 | 06-Aug | 1 | 4 | 0 | 6 | 2 | 7 | | 20 | |
| | 09-Aug | 20 | 1 | 0 | 10 | 1 | 8 | | 40 | |
| | 10-Aug | | 0 | | | | | 103 | 103 | |
| | 12-Aug | 2 | 0 | 0 | 8 | 1 | 17 | | 28 | 191 |
| 8/2 | 14-Aug | 5 | 3 | 0 | 2 | 0 | 26 | | 36 | |
| | 19-Aug | 4 | 0 | 0 | 2 | 0 | 25 | | 31 | 67 |
| 8/3 | 20-Aug | 4 | 1 | 0 | 1 | 0 | 47 | | 53 | |
| | 25-Aug | 3 | 6 | | 0 | 0 | 1 | 44 | 54 | |
| | 26-Aug | 1 | 0 | | 0 | 1 | 5 | 24 | 31 | 138 |
| 8/4 | 29-Aug | 5 | 4 | 0 | 0 | 2 | 20 | 1 | 32 | |
| | 01-Sep | 3 | 0 | 0 | 0 | 1 | 3 | 42 | 49 | 81 |
| 9/1 | 03-Sep | 3 | 4 | 0 | 0 | 0 | 0 | 68 | 75 | |
| | 09-Sep | 9 | 5 | 0 | 1 | 0 | 1 | 0 | 16 | 91 |
| 9/2 | 12-Sep | 7 | 9 | 0 | 2 | 0 | 9 | | 27 | 27 |
| 9/3 | 17-Sep | 12 | 14 | 0 | 0 | 2 | 0 | 0 | 28 | |
| | 21-Sep | 18 | 37 | 0 | 0 | 0 | 1 | 0 | 56 | |
| | 23-Sep | 13 | 28 | 0 | 1 | 1 | 0 | 0 | 43 | 127 |
| 9/4 | 25-Sep | 14 | 24 | 1 | 0 | 0 | 0 | 0 | 39 | |
| | 30-Sep | | 1 | | | | | | 1 | 40 |

Table 6. Summary of management actions for the 1989 west coast Vancouver Island troll fishery.

| PERIOD | MANAGEMENT ACTIONS | | | MANAGEMENT AREAS OPEN |
|---|---|---|---|---|
| | SPECIES OPEN | ACTION | PURPOSE | |
| July 1 to July 11 | All | Fishery open with chinook S.L. of 67 cm conservation areas A, B, C, D, E, G, and S closed. Area F open. | Commence season | 121-127 inclusive, 130-1, 111 and outside portion of Area 11. Areas 23-3 to 23-11, 26-11 and Area 27 except 27-7 to 27-11. Area 24 (Chinook, coho, and chum only). |
| July 12 to July 13 | All | Area F closed and Area E will not open as scheduled. | Coho catch estimate to July 8 780,000. Hail information indicates extremely high catch rate continues. Slow coho catch rate. | 121-127 inclusive, 130-1, 111 and outside portion of Area 11. Areas 23-3 to 23-11, 26-11 and Area 27 except 27-7 to 27-11. Area 24 (Chinook, Coho, and chum only). |
| July 14 to July 19 | None | Areas 121 to 127 and inside the surf line closed. | Slow catch rate of coho. Hail information indicates coho catch rates still very high. | 130-1, 111, and outside portion of Area 11. |
| July 20 to July 26 | All | A corridor along WCVI was closed to all fishing. Closures could be in 3 stages. Area F still closed. WCVI coho alloc. inc. to 1.935 M. | To slow coho catch rate. New objective is retention of coho until end of Aug. Increase chinook catch rate. | CCA A, B, C, and part of D, Areas 123, 124 and 125 seaward of closed corridor (Fig 6). Areas 126, 127, 130-1, 111 and outside portion of Area 11. Inside surf line same as July 14 to July 19. |
| July 27 to Aug 1 | All | Open all of CCA D and waters shoreward. | Continue to slow the coho catch rate and to provide inc. sockeye fishing opportunities. | CCA A, B, C and D. Areas 123, 124, 125 seaward of the closed portion (Fig 7) 126, 127, 130-1 ,111 and outside portion of Area 11 Areas 23-3 to 23-11, Area 26-11, Area 27 except 27-7 to 27-11. Area 24 (Chinook Coho, and Chum only). On Aug 1 in Area 24 only 24-2 24-6 and 24-8 open, rest closed and all Area 27 closed. |
| Aug 2 to Aug 5 | All | Northern Bdy of closed corridor moved south to Estavan Point. Water shoreward of CCA C opened. | Provide increased sockeye opportunities. | CCA A, B, C and D. Shore-of CCA C. Areas 123, 124, and 125 seaward of closed portion (Fig 8). Area 126, 127, 130-1, 111, and out-portion of Area 11. Areas 23-3 to 23-11 and 26-11. In Areas 24-2, 24-6, and 24-8 (Coho, Chum, and Chinook). |
| Aug 6 to Aug 11 | None | WCVI closed to all trolling. Areas 21-27 and 121-127. | To avoid coho MR when pink abund. inc. the WCVI closed when sockeye alloc. reached. | Areas 130-1, 111 and outside portion of Area 11. MR and MP of sockeye in above areas. |

TABLE 6. (cont'd)

| PERIOD | MANAGEMENT ACTIONS | | | MANAGEMENT AREAS OPEN |
|---|---|---|---|---|
| | SPECIES OPEN | ACTION | PURPOSE | |
| Aug 12 to Aug 18 | Coho Pink Chum Chinook | WCVI re-opens with NR and NP of sockeye. Area closures in effect. | Avoid sockeye shaking and high coho catch rates, while maintaining as much good chinook fishing as possible. is projected to be reached on Aug. 5. | CCA A, C, D, and E. Portions of Areas 121-127, 130-1, 111 and outside portion of Area 11. Areas 23-3 to 23-11 and 26-11. In Areas 24-2, 24-6, and 24-8 (Coho, Chinook and Chum only). See Fig 9. |
| Aug 19 to Aug 27 | Sockeye Coho Pink Chum Chinook | WCVI re-opens to sockeye retention, due to a run size upgrade of 7 million. Troll allocation 1.4 million. Aug 23 sockeye run size downgraded by 1 million Troll allocation 1.27 million. Opened Area G August 23. | Provide opportunity to catch the 546,000 remaining in the sockeye allocation. Area G opened to maintain sockeye catch. | CCA A, B, C, D and E. Area 121-127, 130-1, 111 and outside portion of Area 11. Areas 23-3 to 23-11 (Sockeye NR). 26-11; In Areas 24-2, 24-6 and 24-8 (Coho, Chum and Chinook). |
| Aug 28 to Aug 30 | Pink Chum Chinook | WCVI closes to sockeye and coho (NR and NP) 2359 hours Aug 27. Area G closed. | Sockeye allocation and coho ceiling has been reached | CCA A, B, C, D, and E. Areas 121-127 and Area 130-1. Areas 11 and 111 (Pink and Chum only); Areas 23-3 to 23-11; Area 26-11; Areas 24-2, 24-6, and 24-8 (Chum and Chinook only). |
| Aug 31 to Sep 3 | Pink Chum Chinook | Fraser River Panel revieved the pink run size on Sep 1 and down-graded the run to 13 million from the preseason estimate of 17 million. | All of the WCVI closes to all salmon trolling for all species at 2359 hours Sep 3. Trolling closes as the pink allocation has been reached. | CCA A, B, C, D, and E. Areas 121-127 and Area 130-1. Areas 11 and 111 (Pink and Chum only); Areas 23-3 to 23-11; Area 26-11; Areas 24-2, 24-6, and 24-8 (Chum and Chinook only). |
| Sep 4 to Sep 10 | | WCVI closed to all trolling. | | |
| Sep 11 to Sep 12 | Pink Chum Chinook | Fraser River Panel revieved the pink run size on Sep 8 and up-graded the run to 15 million. | Portions of the WCVI open to catch the remaining pink salmon allocation. | Area G and outside portion of Area 11 and net portions of area 12 (pinks only). On Sep 12 Areas 20-1,3,4 open to trolling, however, if seine opening is extended troll opening delayed to Sep 13. |
| Sep 13 to Sep 15 | | Fraser Panel downgraded pink run to 14 million on Wed. Sep 13. | Panels waters 20-1,3,4 closed Wed Sep 13. Area 11, 12 and G closed as scheduled 2359 hrs sep 15. | |
| Sep 16 | | WCVI closed to trolling | | |

Table 7. Weekly 1989 troll catch and days fishing for west coast Vancouver Island.

| Stat Week | Chinook | | Coho | | Sockeye | | Pink | | Chum | | Troll Days |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Catch | Cum. Total | Catch | Cum. Total | Catch | Cum. Total | Catch | Cum. Total | Catch | Cum. Total | |
| 5/3 | 246 | 246 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| 5/4 | 277 | 523 | 44 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 19 |
| 6/1 | 0 | 523 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/2 | 0 | 523 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/3 | 0 | 523 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6/4 | 606 | 1,129 | 4,292 | 4,337 | 130 | 130 | 547 | 547 | 21 | 21 | 91 |
| 7/1 | 18,264 | 19,393 | 353,015 | 357,352 | 12,018 | 12,148 | 52,546 | 53,093 | 3,859 | 3,880 | 2,983 |
| 7/2 | 43,863 | 63,256 | 787,336 | 1,144,688 | 17,135 | 29,283 | 170,961 | 224,054 | 3,753 | 7,633 | 6,967 |
| 7/3 | 9,706 | 72,962 | 69,463 | 1,214,151 | 44,291 | 73,574 | 48,134 | 272,188 | 2,533 | 10,166 | 1,123 |
| 7/4 | 49,798 | 122,760 | 219,033 | 1,433,184 | 119,019 | 192,593 | 212,589 | 484,777 | 2,332 | 12,498 | 4,387 |
| 7/5 | 17,027 | 139,787 | 104,341 | 1,537,525 | 366,172 | 558,765 | 246,532 | 731,309 | 5,096 | 17,594 | 4,062 |
| 8/1 | 15,410 | 155,197 | 84,696 | 1,622,221 | 472,143 | 1,030,908 | 240,607 | 971,916 | 4,666 | 22,260 | 4,693 |
| 8/2 | 16,912 | 172,109 | 137,281 | 1,759,502 | 28,477 | 1,059,385 | 132,592 | 1,104,508 | 493 | 22,753 | 3,171 |
| 8/3 | 14,027 | 186,136 | 86,406 | 1,845,908 | 169,792 | 1,229,177 | 513,103 | 1,617,611 | 1,456 | 24,209 | 3,740 |
| 8/4 | 10,562 | 196,698 | 72,864 | 1,918,772 | 189,544 | 1,418,721 | 753,824 | 2,371,435 | 2,867 | 27,076 | 4,340 |
| 9/1 | 4,554 | 201,252 | 13,639 | 1,932,411 | 10,139 | 1,428,860 | 413,643 | 2,785,078 | 1,514 | 28,590 | 2,093 |
| 9/2 | 371 | 201,623 | 14 | 1,932,425 | 192 | 1,429,052 | 32,097 | 2,817,175 | 332 | 28,922 | 115 |
| 9/3 | 164 | 201,787 | 82 | 1,932,507 | 4 | 1,429,056 | 5,258 | 2,822,433 | 38 | 28,960 | 13 |
| Total | 201,787 | | 1,932,507 | | 1,429,056 | | 2,822,433 | | 28,960 | | 37,804 |

Data Sources:
1) B.C. Catch Stats, May 1990 and catch estimates for North Coast (Areas 1-10) Sockeye provided by the PSC (Aug. 3, 1990). North Coast (Areas 1-10) catch of southerly migrating pink salmon provided in-season 1989 by the PSC.
2) Chinook and Coho catches Areas 21-27,121-127 and 130-1.
3) The Sockeye catch is for Fraser River Sockeye catch in all outside troll areas.
4) The pink salmon catch is the estimated catch of southerly migrating pink salmon in all outside troll areas.
5) Chum catch is for Areas 21-27, 121-127, 130-1, 11 and 12
6) Troll days from Salmon Catch Database, February 1990.

# Table 8. Comparison of troll catch estimates by various methodologies for west coast of Vancouver Island.

## CUMULATIVE

| | STATISTICAL WEEK | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 7/1 | 7/2 | 7/3 | 7/4 | 7/5 | 8/1 | 8/2 | 8/3 | 8/4 | 9/1 | 9/2 |
| **SOCKEYE** | | | | | | | | | | | |
| COMPANY | 20,000 | 26,000 | 31,000 | 200,000 | 667,600 | 670,000 | 912,700 | 956,200 | 1,040,624 | - | - |
| ISCMP | 17,323 | 39,700 | 42,400 | 222,700 | 788,200 | 978,100 | 944,800 | 1,162,800 | 1,170,400 | 1,008,000 | 1,031,700 |
| UPD-ISCMP | 26,700 | 37,100 | 61,800 | 248,200 | 764,200 | 764,200 | 812,700 | 1,010,300 | 1,031,700 | 1,031,700 | 1,031,700 |
| HAILS | 20,000 | 30,800 | 43,000 | 205,000 | 980,000 | 980,800 | 727,800 | 884,300 | 1,000,825 | - | - |
| CHOSEN | 20,000 | 30,000 | 40,000 | 210,000 | 980,000 | 980,000 | 980,000 | 980,000 | 980,000 | 980,000 | 980,000 |
| IN-SSLIPS | - | 18,000 | 23,500 | 44,237 | 142,000 | 829,475 | 811,070 | 908,516 | 977,568 | 981,548 | 982,526 |
| UPDSSLIPS | 24,437 | 35,449 | 59,427 | 238,247 | 752,291 | 752,291 | 786,420 | 975,325 | 992,529 | 992,529 | 992,529 |
| **COHO** | | | | | | | | | | | |
| COMPANY | 728,000 | 1,100,000 | 1,300,000 | 1,500,000 | 1,633,200 | 1,800,000 | 1,864,800 | 2,001,300 | 2,087,253 | - | - |
| ISCMP | 537,248 | 873,000 | 932,000 | 1,397,000 | 1,549,800 | 1,620,000 | 1,781,800 | 1,828,300 | 1,845,500 | 1,968,200 | 1,981,900 |
| UPD-ISCMP | 810,300 | 1,176,600 | 1,367,800 | 1,592,800 | 1,706,800 | 1,728,200 | 1,913,000 | 1,975,400 | 1,981,900 | 1,981,900 | 1,981,900 |
| HAILS | 780,000 | 1,106,000 | 1,250,000 | 1,500,000 | 1,600,000 | 1,670,200 | 1,906,000 | 1,975,400 | 1,974,257 | - | - |
| CHOSEN | 780,000 | 1,100,000 | 1,275,000 | 1,500,000 | 1,600,000 | 1,620,000 | 1,870,000 | 1,950,000 | 1,950,000 | 1,950,000 | 1,950,000 |
| IN-SSLIPS | - | 822,000 | 1,298,100 | 1,496,400 | 1,622,700 | 1,784,100 | 1,842,800 | 1,722,355 | 1,848,900 | 1,844,663 | 1,884,297 |
| UPDSSLIPS | 825,670 | 1,188,806 | 1,303,345 | 1,497,378 | 1,605,023 | 1,626,393 | 1,795,482 | 1,857,824 | 1,884,300 | 1,884,300 | 1,884,300 |
| **PINK** | | | | | | | | | | | |
| COMPANY | 80,000 | 154,000 | 200,000 | 350,000 | 658,200 | 577,000 | 834,400 | 1,232,100 | 1,708,126 | - | - |
| ISCMP | 61,034 | 131,000 | 180,000 | 443,000 | 571,500 | 608,000 | 723,400 | 1,042,700 | 1,387,700 | 1,491,400 | 1,564,200 |
| UPD-ISCMP | 121,300 | 193,100 | 288,100 | 457,700 | 629,900 | 664,700 | 813,800 | 1,140,800 | 1,428,700 | 1,546,200 | 1,564,200 |
| HAILS | 71,000 | 200,000 | 263,000 | 350,000 | 563,000 | 576,300 | 835,700 | 1,532,600 | 2,162,137 | - | - |
| CHOSEN | 70,000 | 150,000 | 210,000 | 380,000 | 580,000 | 580,000 | 835,000 | 1,250,000 | 1,750,000 | 1,750,000 | 1,750,000 |
| IN-SSLIPS | - | 101,000 | 151,800 | 207,234 | 316,100 | 457,295 | 505,088 | 771,677 | 962,301 | 1,251,576 | 1,361,221 |
| UPDSSLIPS | 124,254 | 193,483 | 247,578 | 402,723 | 570,752 | 583,108 | 732,200 | 1,058,391 | 1,323,508 | 1,351,181 | 1,361,234 |
| **CHUM** | | | | | | | | | | | |
| COMPANY | 6,000 | 7,100 | 7,000 | 12,000 | 19,200 | 18,000 | 20,900 | 25,800 | 27,901 | - | - |
| ISCMP | 3,833 | 10,000 | 11,000 | 30,500 | 26,000 | 28,100 | 27,900 | 30,200 | 33,300 | 33,600 | 33,700 |
| UPD-ISCMP | 5,100 | 9,400 | 10,700 | 20,500 | 26,000 | 28,200 | 28,200 | 30,200 | 33,000 | 33,600 | 33,700 |
| HAILS | 1,000 | 4,300 | 4,000 | 6,500 | 12,000 | 13,100 | 13,400 | 14,100 | 14,553 | - | - |
| CHOSEN | 4,000 | 7,000 | 7,500 | 10,000 | 12,000 | 18,000 | 25,000 | 29,000 | 32,000 | 32,000 | 32,000 |
| IN-SSLIPS | - | 0 | 5,000 | 6,430 | 8,400 | 12,207 | 13,805 | 16,326 | 17,054 | 18,977 | 19,765 |
| UPDSSLIPS | 2,805 | 5,899 | 7,026 | 12,086 | 16,982 | 16,928 | 17,704 | 18,576 | 19,646 | 19,767 | 19,768 |
| **CHINOOK** | | | | | | | | | | | |
| COMPANY | 36,000 | 59,000 | 63,000 | 150,000 | 159,300 | 145,000 | 185,800 | 184,800 | 201,354 | - | - |
| ISCMP | 36,457 | 60,800 | 90,000 | 137,300 | 156,400 | 161,800 | 186,200 | 182,800 | 204,200 | 208,500 | 209,800 |
| UPD-ISCMP | 43,700 | 67,300 | 97,900 | 143,700 | 165,100 | 169,200 | 180,800 | 189,000 | 208,500 | 209,600 | 209,600 |
| HAILS | 42,000 | 59,300 | 103,000 | 130,000 | 140,000 | 143,800 | 171,500 | 178,500 | 183,664 | - | - |
| CHOSEN | 42,000 | 60,000 | 92,000 | 130,000 | 140,000 | 150,000 | 180,000 | 185,000 | 195,000 | 195,000 | 195,000 |
| IN-SSLIPS | - | 43,000 | 66,000 | 81,648 | 113,400 | 137,507 | 146,200 | 165,352 | 173,980 | 186,241 | 190,348 |
| UPDSSLIPS | 44,373 | 66,978 | 89,905 | 133,462 | 162,344 | 165,238 | 178,470 | 184,804 | 189,780 | 190,254 | 190,338 |

NOTE:

1) COMPANY – Survey of landings by west coast processors.
2) ISCMP – In-season catch monitoring program.
3) HAILS – On-water fishing officer hail program.
4) IN-SSLIPS – In-season sale slip estimates.
5) UPDSSLIPS – Post-season sale slip figure. This sales slip estimate was adjusted to reflect the time of catch and not when the catch was landed.

Table 9. West coast Vancouver troll gear counts in 1989 by overflights.

| Stat Week | Date | Statistical Area | | | | | | | | Daily Total | Weekly Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 121 | 123 | 124 | 125 | 126 | 127 | 11 | 12 | | |
| 7/1 | 01-Jul | 6 | 48 | 335 | 100 | 72 | 99 | 54 | 0 | 714 | 714 |
| 7/2 | 09-Jul | 17 | 69 | 313 | 102 | 48 | 132 | 4 | 0 | 685 | 685 |
| 7/3 | 19-Jul | 19 | 358 | 10 | 29 | 160 | 89 | 0 | 0 | 665 | |
| | 22-Jul | 26 | 132 | 141 | 31 | 128 | 200 | 56 | 0 | 714 | 1379 |
| 7/4 | 24-Jul | 39 | 26 | 12 | 32 | 40 | 132 | 29 | 0 | 310 | |
| | 27-Jul | 10 | 14 | 115 | 155 | 30 | 350 | 0 | 0 | 674 | 984 |
| 7/5 | 30-Jul | 0 | 115 | 167 | 148 | 24 | 89 | 2 | 0 | 545 | |
| | 01-Aug | 2 | 53 | 44 | 45 | 286 | 233 | 33 | 0 | 696 | 1241 |
| 8/1 | 10-Aug | | 442 | 33 | 30 | 17 | 140 | 0 | 0 | 662 | 662 |
| 8/2 | 19-Aug | 45 | 394 | 118 | 11 | 21 | 106 | 53 | 0 | 748 | 748 |
| 8/3 | 20-Aug | | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 11 | 11 |
| | 22-Aug | 89 | 270 | 65 | 38 | 12 | 66 | 18 | 0 | 558 | 569 |
| 8/4 | 28-Aug | 3 | 10 | 52 | 111 | 12 | 44 | 121 | 0 | 353 | 353 |

Table 10. Summary of management actions for the 1989 Johnstone Strait troll fishery.

| PERIOD | | MANAGEMENT ACTIONS | | | MANAGEMENT AREAS OPEN |
|---|---|---|---|---|---|
| | STAT AREA | SPECIES OPEN | ACTION | PURPOSE | |
| July 1 to July 2 | 11 | All | Fishery opens with barbed hooks permitted. | Commence troll season in concert with WCVI and Gulf. | Portion of 11-1 and 11-2 7 days per week. |
| | 12 | Coho Chinook | Fishery opens with barbed hooks permitted. | Commence troll season in concert with WCVI and Gulf. | 12-10 and 12-13 7 days per week. |
| July 2 to July 3 | 11 | All | No change. | Harvest troll allocation | Portion of 11-1 and 11-2 7 days per week. |
| | 12 | *Depends on licence | Open net areas 24 hours starting 1800 hours July 2. | Allow greater access to sockeye, coho and chum. | Areas 12-1, 12-3 and 12-4 open 24 hours. |
| July 3 to July 9 | 11 | All | No change. | | Portions of 11-1 and 11-2 7 days per week. |
| | 12 | Coho Chinook | Continue fishery in Deserters group. | | 12-10 and 12-13 7 days per week. |
| July 9 to July 12 | 11 | All | No Change. | | Portions of 11-1 and 11-2 7 days per week. |
| July 9 to July 12 | 12 | Depends on licence | Open net areas 72 hours starting 1800 hours July 9. | Allow greater access to sockeye, coho, pink and chinook. | Areas 12-1, 12-3 and 12-4 open 48 hours. |
| July 12 to July 16 | 11 | All | No change. | | Portions of Area 11-1 and and 11-2. |
| | 12 | Coho Chinook | Continue fishing in Deserters Group only. | | Areas 12-10 and 12-13 only 7 days per week. |
| July 16 to July 18 | 11 | All | No change. | | Portions of Area 11-1 and 11-2. |
| | 12 | All | Open net Areas 24 hours starting 1800 hours July 16. | Allow greater access to sockeye, coho, pink and chinook | Areas 12-1, 12-3 and 12-4 open 24 hours. |
| July 18 to July 23 | 11 | All | No change. | | Portions of Area 11-1 and 11-2. |
| | 12 | | Continue fishing in Deserters Group. | | Areas 12-10 and 12-13 only 7 days per week. |

*Trolling for coho and chinook is permitted in Areas 12-10 and 12-13 7 days per week for both inside and outside licenced vessls. In all other Sub-areas of 12 trolling is only permitted during gillnet fishing times and areas for both inside and outside licenced vessels with non-retention of chinook for vessels with inside licences.

TABLE 10. (Cont'd)

| PERIOD | | MANAGEMENT ACTIONS | | | MANAGEMENT AREAS OPEN |
|---|---|---|---|---|---|
| | STAT AREA | SPECIES OPEN | ACTION | PURPOSE | |
| July 23 to July 26 | 11 | All | No change. | | Portion of 11-1 and 11-2 7 days per week. |
| | 12 | Depends on licence | Open net areas 1800 hours July 23 to 0700 hours July 26. | Allow greater access to sockeye, coho, pink and chinook. | Areas 12-1, 12-3, 12-4, portion of 12-5, 12-8 to 12-11 and portion of 12-12 |
| July 26 to July 30 | 11 | All | No change. | | Portion of 11-1 and 11-2 7 days per week. |
| | 12 | Coho Chinook | Continue fishery in Deserters Group. | | Areas 12-10 and 12-13 7 days per week. |
| July 30 to Aug. 2 | 11 | All | No change. | | Portions of 11-1 and 11-2 7 days per week. |
| | 12 | Depends on licence | Open net areas 1800 July 30 to 0700 August 2. | | Areas 12-1, 12-3, 12-4, portion of 12-5, 12-8 to 12-11 and portion of 12-12 |
| Aug. 2 to Aug. 6 | 11 | All | No Change. | | Portions of 11-1 and 11-2 7 days per week. |
| | 12 | Coho Chinook | Continue fishing in Desserters Group. | | Area 12-10 and 12-13 open 7 days per week. |
| Aug. 6 to Aug. 11 | 11 | Coho Pink Chum Chinook | Non-retention and non-possession of sockeye for outside trollers | Outside troll sockeye allocation of 706,000 reached. | Portion of 11-1 and 11-2 7 days per week. |
| | 12 | Sockeye Coho Pink Chum | Closed to outside licences. Inside trollers open 1800 hrs Aug. 7 to 0700 hrs Aug. 11. | Sockeye allocation reached, therefore, in order to avoid a coho NR fishery when pink abundance increases, closed to outside trollers. | Areas 12-1, 12-3, 12-4, portion of 12-5, 12-8 to 12-11 and portion of 12-12 |
| Aug. 12 to Aug. 13 | 11 | Coho Pink Chum Chinook | No change. | | Portion of 11-1 and 11-2 7 days per week. |
| | 12 | Coho Chinook | Continue fishery in Deserters Group. | | Areas 12-10 and 12-13 7 days per week. |
| Aug. 13 to Aug. 17 | 11 | All | No change. | | Portions of 11-1 and 11-2 7 days per week. |
| | 12 | All | Open net areas 1800 Aug. 13 to 0700 Aug. 17 NR an NP of sockeye for outside trollers. | | Areas 12-1, 12-3, 12-4, portion of 12-5, 12-8 to 12-11 and portion of 12-12 |

TABLE 10. (cont'd)

| PERIOD | | MANAGEMENT ACTIONS | | | MANAGEMENT AREAS OPEN |
|---|---|---|---|---|---|
| | STAT AREA | SPECIES OPEN | ACTION | PURPOSE | |
| Aug. 17 to Aug. 20 | 11 | Coho Pink Chum Chinook | No change. | | Portion of 11-1 and 11-2 7 days per week. |
| | 12 | Coho Chinook | Continue fishery in Deserters Group. | | Areas 12-10 and 12-13 7 days per week. |
| Aug. 20 to Aug. 24 | 11 | All | Re-opened to sockeye due to run size up-grade. | Sockeye run size up-graded to 20 million. Outside troll allocation now 1.376 million. | Portion of 11-1 and 11-2 7 days per week. |
| | 12 | All | Open 1400 hours Aug. 20 to 0800 hours Aug. 24. | See Area 11 above. | Areas 12-1, 12-3 to 12-6, 12-8 to 12-12 and portion 12-18. |
| Aug. 24 to Aug. 27 | 11 | All | No change. | | Portions of 11-1 and 11-2 7 days per week. |
| | 12 | All | Inside licences until further notice. Outside licences until sockeye allocation reached. | Run size down-graded to 19 million August 23 Allocation outside 1.276 million and inside trollers 255,000 sockeye. | Areas 12-1, 12-3, 12-4, portion of 12-5, 12-8 to 12-11 and portion of 12-12 |
| Aug. 28 to Sept. 10 | 11 | Pink Chum | Sockeye, coho and chinook closed. | Sockeye allocation reached; coho wish to protect local stocks; chinook north coast ceiling reached. | Portion of 11-1 and 11-2 7 days per week. |
| | 12 | All | Closed to outside trollers. Inside trollers UFN. | Sockeye allocation for outside trollers reached. | Areas 12-1, 12-3 to 12-6, 12-8 to 12-12 and portion 12-18. |
| Sep. 11 to Sep. 12 | 11 | Pink | Fraser River Panel up-graded pink salmon from 13 to 15 million. | Catch remaining alloca. Outside troll alloca. 2.724 M; inside 376,000 | Portion of Area 11-1 and 11-2, 7 days per week. |
| | 12 | Sockeye Pink | Outside trollers only allowed to retain pink salmon | Outside troll allocation of sockeye reached | Area 12-1, 12-3 to 12-6, 12-8 to 12-12 and portion of 12-18. |
| Sep. 13 to Sep. 15 | 11 | Pink | Closed as scheduled 2359 hours Sep. 15 for balance of season. | Fraser River Panel down-graded pink salmon run size from 15 to 14 million and thus outside and inside troll allocation of pink salmon reached. | Portion of Areas 11-1 and 11-2. |
| | 12 | Sockeye Pink | Closed as scheduled 2359 hours Sep 15. for balance of season. Outside trollers allowed to retain only pink salmon. | | Area 12-1, 12-3 to 12-6, 12-8 to 12-12 and portion 12-18. |

Table 11. Weekly 1989 troll catch and days fishing for Johnstone Strait.

| Stat Week | Chinook | | Coho | | Sockeye | | Pink | | Chum | | Troll Days |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Catch | Cum. Total | Catch | Cum. Total | Catch | Cum. Total | Catch | Cum. Total | Catch | Cum. Total | |
| 7/2 | 324 | 324 | 15,076 | 15,076 | 85 | 85 | 1,116 | 1,116 | 0 | 0 | 591 |
| 7/3 | 47 | 371 | 7,025 | 22,101 | 1,066 | 1,151 | 1,076 | 2,192 | 2 | 2 | 361 |
| 7/4 | 341 | 712 | 7,481 | 29,582 | 14,367 | 15,518 | 11,925 | 14,117 | 12 | 14 | 570 |
| 7/5 | 62 | 774 | 2,879 | 32,461 | 33,504 | 49,022 | 25,535 | 39,652 | 88 | 102 | 581 |
| 8/1 | 71 | 845 | 1,018 | 33,479 | 45,737 | 94,759 | 17,397 | 57,049 | 57 | 159 | 623 |
| 8/2 | 40 | 885 | 760 | 34,239 | 50,639 | 145,398 | 23,198 | 80,247 | 29 | 188 | 592 |
| 8/3 | 403 | 1,288 | 963 | 35,202 | 24,680 | 170,078 | 20,965 | 101,212 | 44 | 232 | 518 |
| 8/4 | 424 | 1,712 | 469 | 35,671 | 25,607 | 195,685 | 50,462 | 151,674 | 169 | 401 | 608 |
| 9/1 | 41 | 1,753 | 1,360 | 37,031 | 14,749 | 210,434 | 69,847 | 221,521 | 472 | 873 | 550 |
| 9/2 | 21 | 1,774 | 1,221 | 38,252 | 2,486 | 212,920 | 34,802 | 256,323 | 891 | 1,764 | 293 |
| 9/3 | 1 | 1,775 | 2,416 | 40,668 | 193 | 213,113 | 3,849 | 260,172 | 564 | 2,328 | 225 |
| 9/4 | 0 | 1,775 | 1,044 | 41,712 | 224 | 213,337 | 465 | 260,637 | 2,737 | 5,065 | 165 |
| 10/1 | 0 | 1,775 | 339 | 42,051 | 117 | 213,454 | 121 | 260,758 | 1,426 | 6,491 | 74 |
| Total | 1,775 | | 42,051 | | 213,454 | | 260,758 | | 6,491 | | 5,751 |

Notes: 1) Catch and troll day estimates from F.Y.C. Wong (1983) Salmon Catch Database, to May 1990.
2) Catch estimates are for Areas 11,12, and 111 except for chinook which are from Area 12 only.

# FIGURES

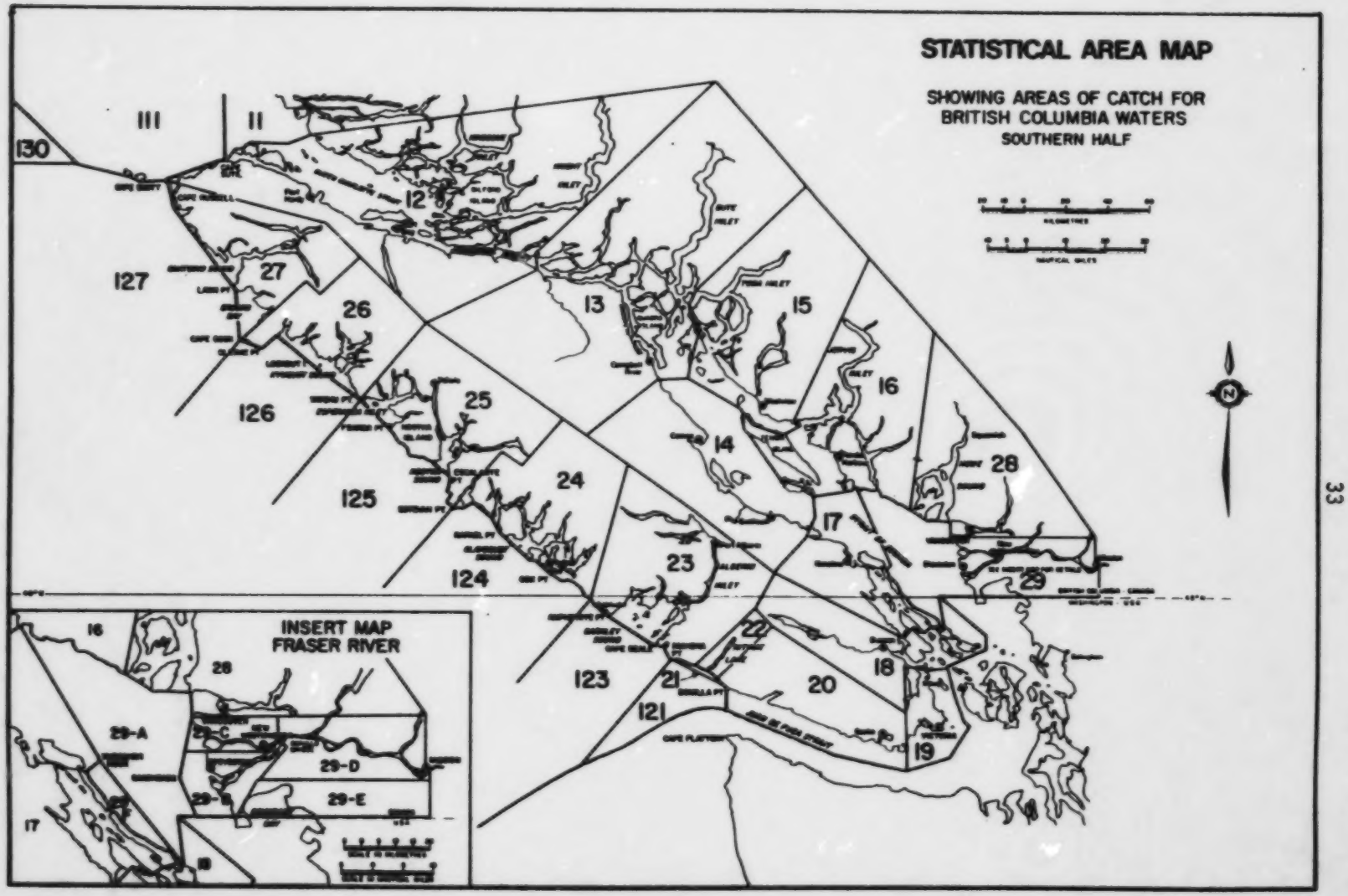



Figure 1. Statistical area map for Southern British Columbia.

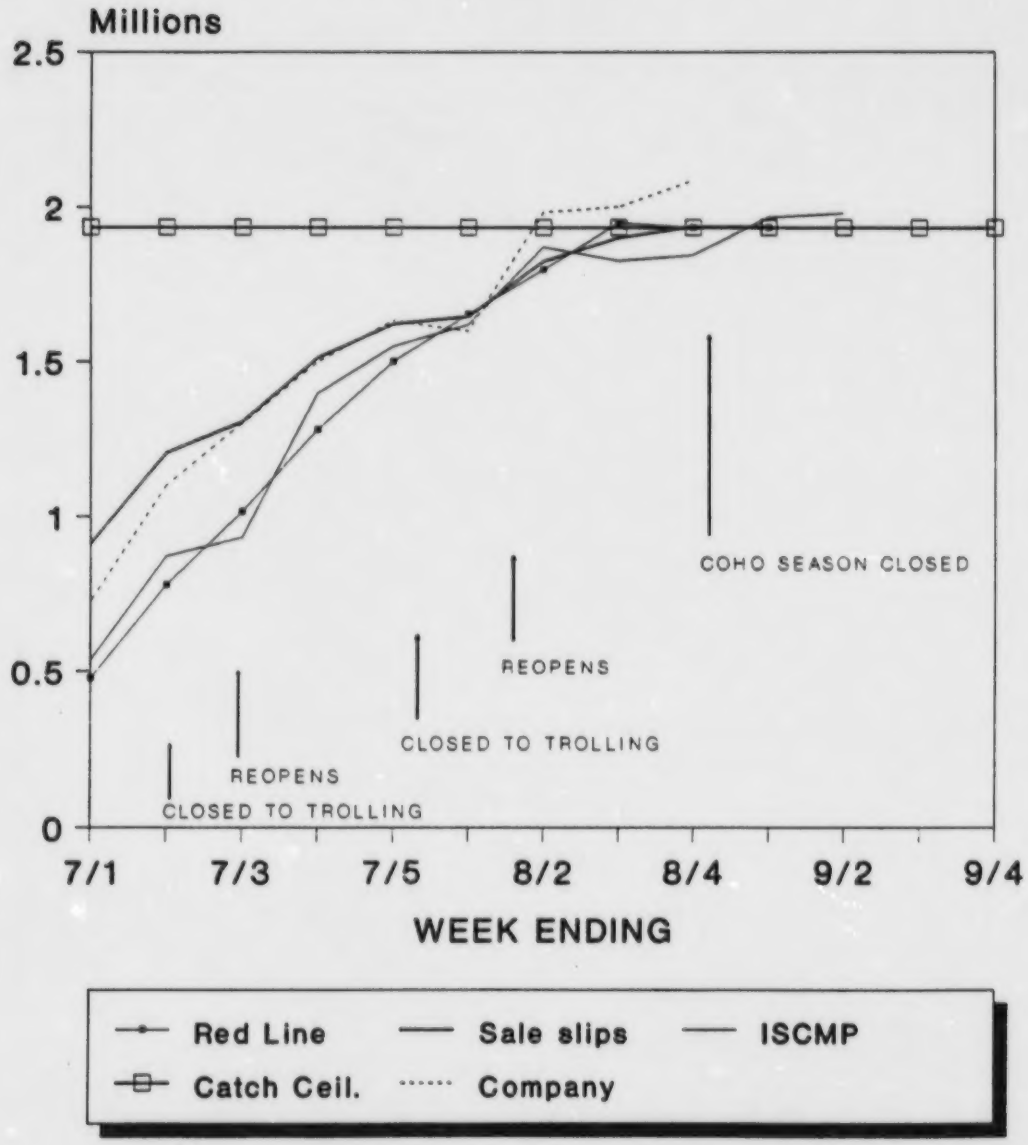



Fig. 2. WCVI coho troll catch estimates compared to red line

Figure 3. Strait of Georgia overflight routes.

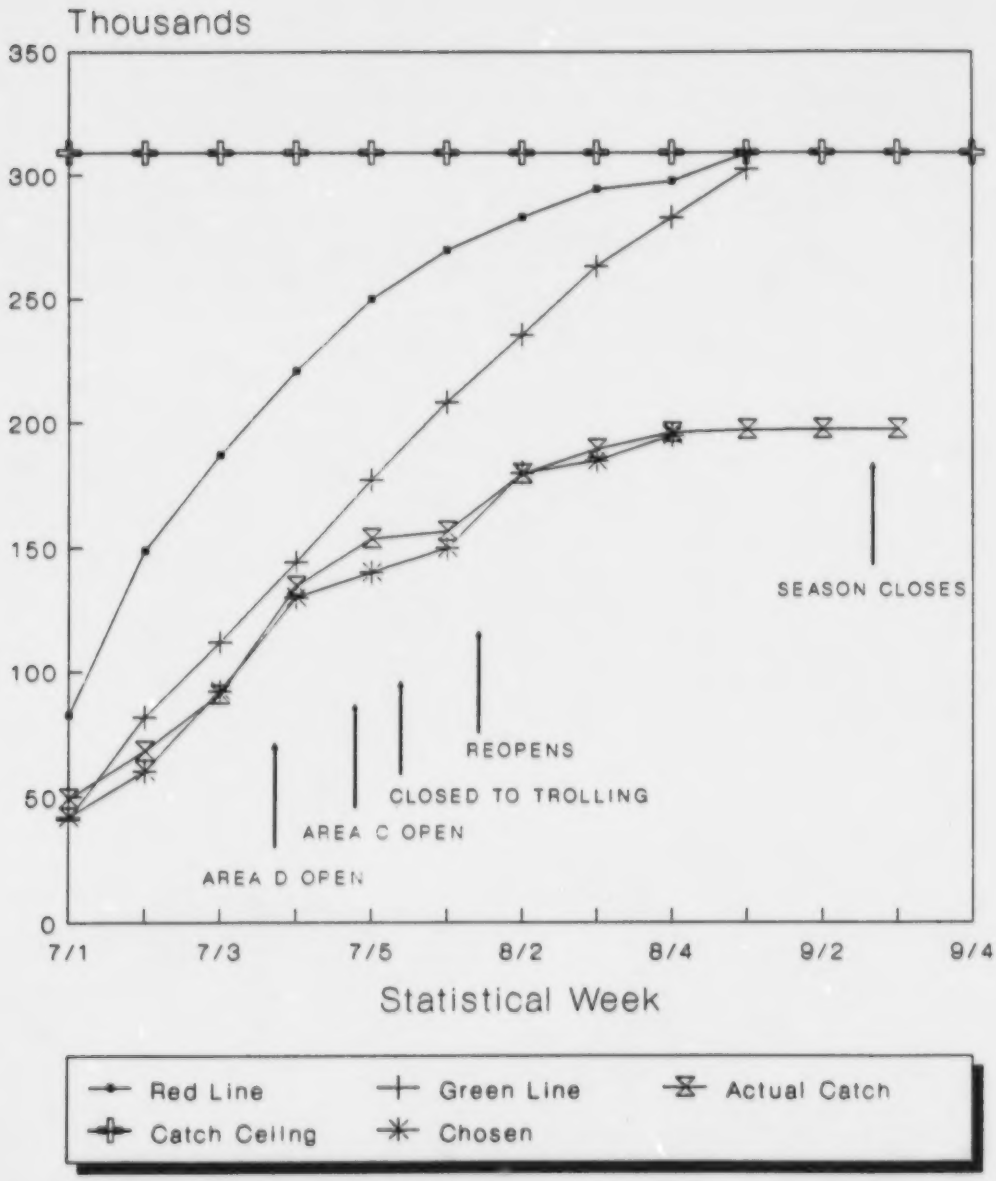



**Fig. 4. WCVI chinook troll catch estimates compated to red and green lines. Sale slips accessed Nov. 15, 1989.**

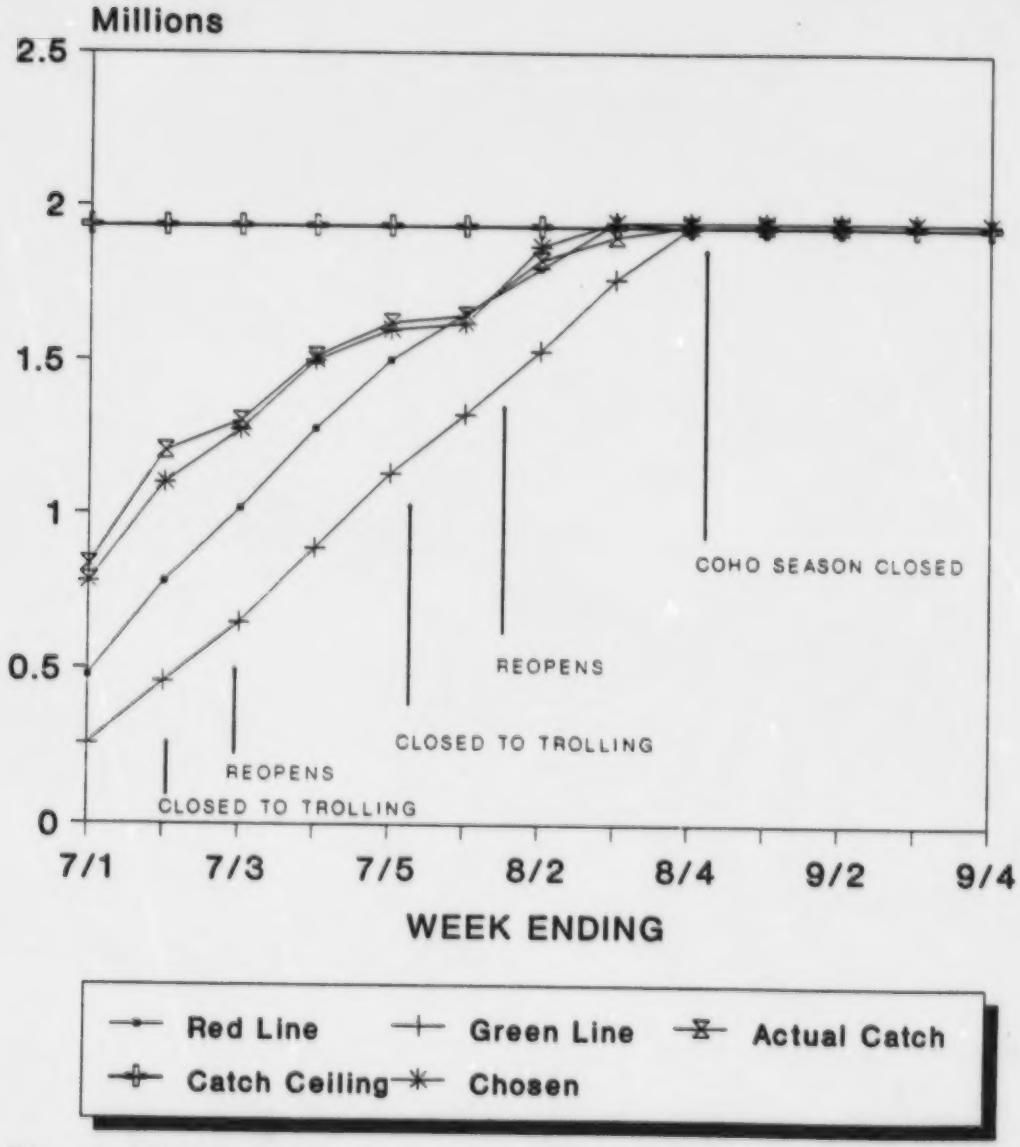



Fig. 5. WCVI coho troll catch estimates compared to red and green lines.

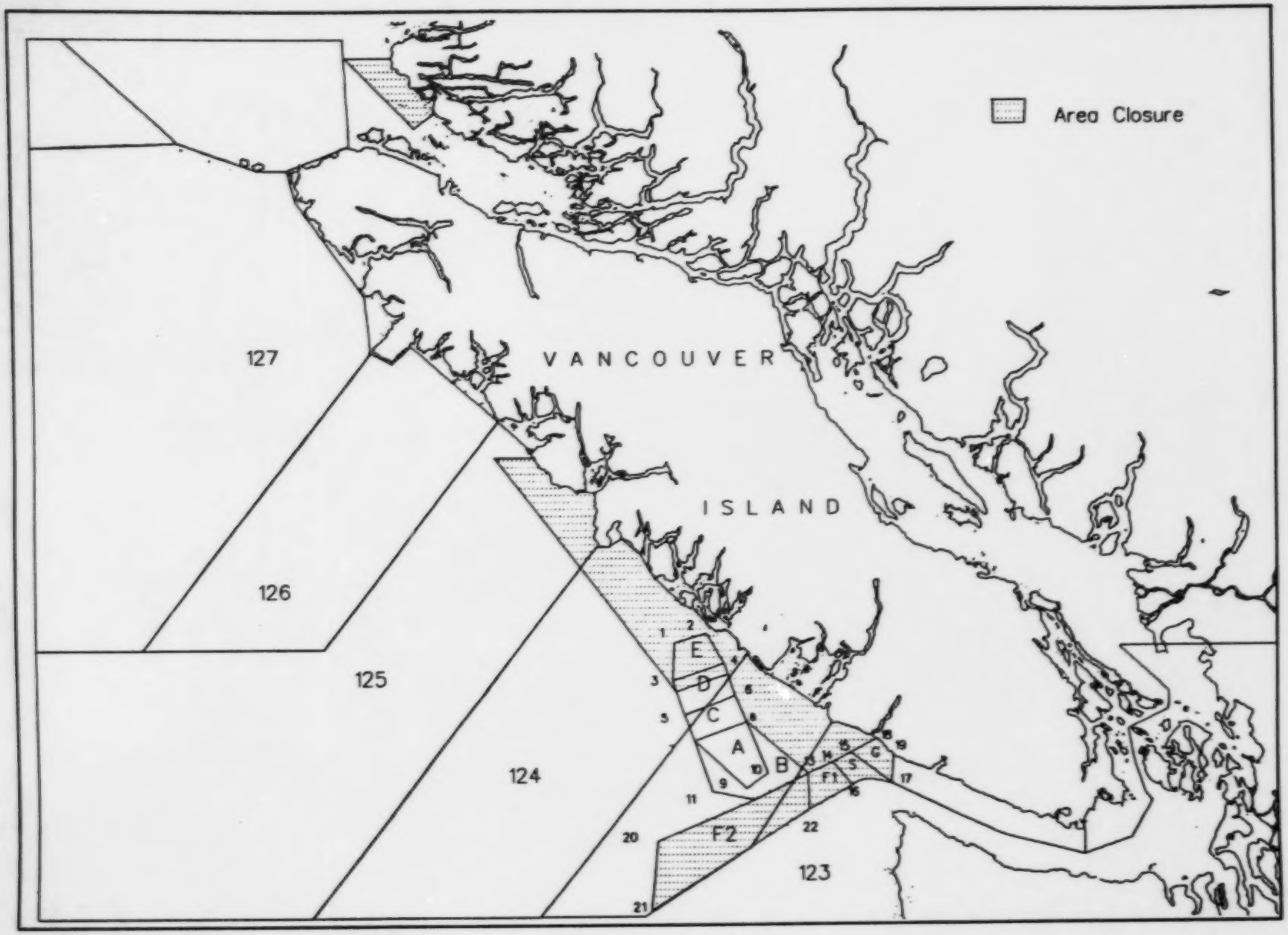



Figure 6. Area closures in effect from July 20 to July 26.

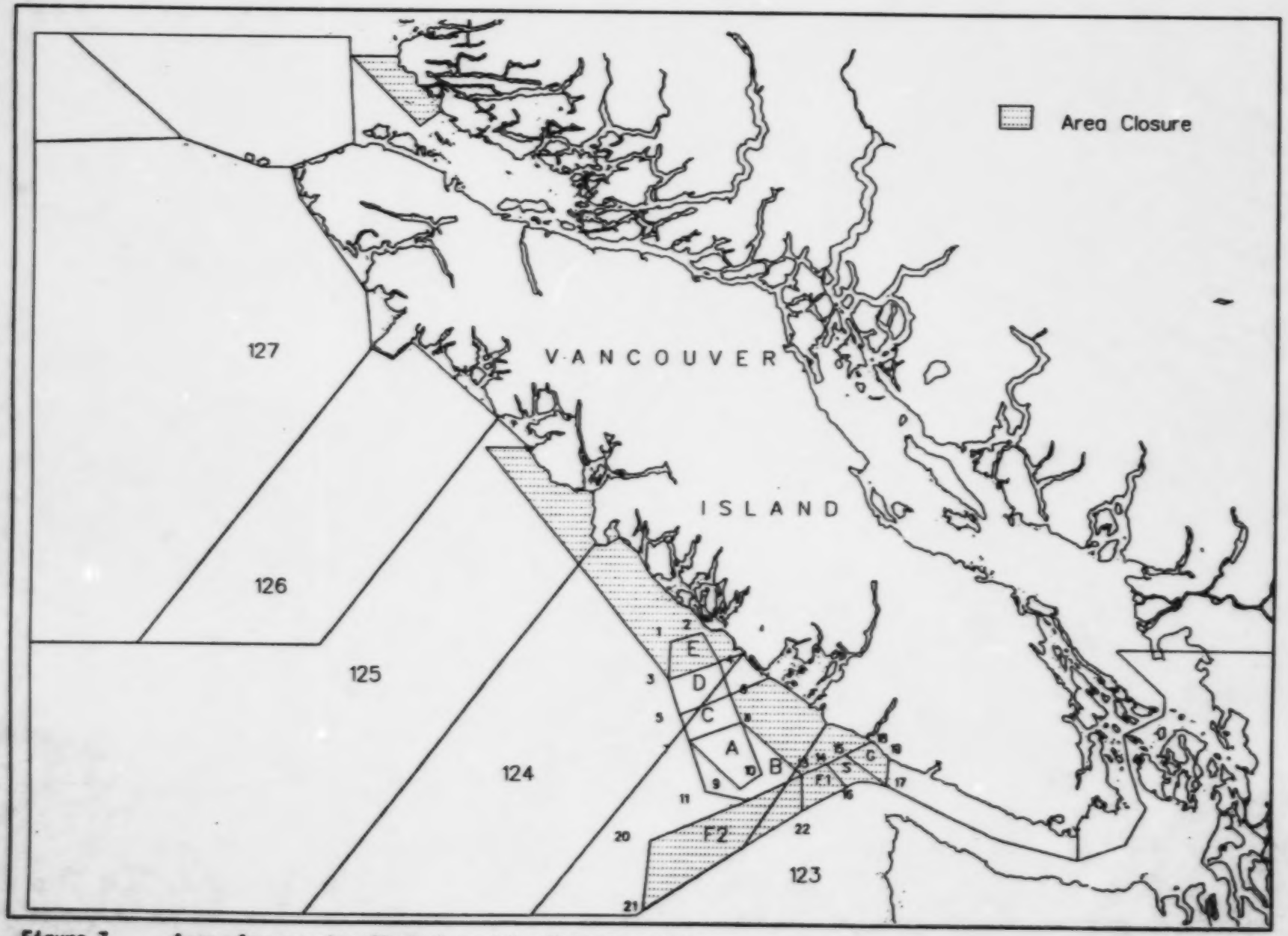



Figure 7. Area closures in effect from July 27 to August 1.

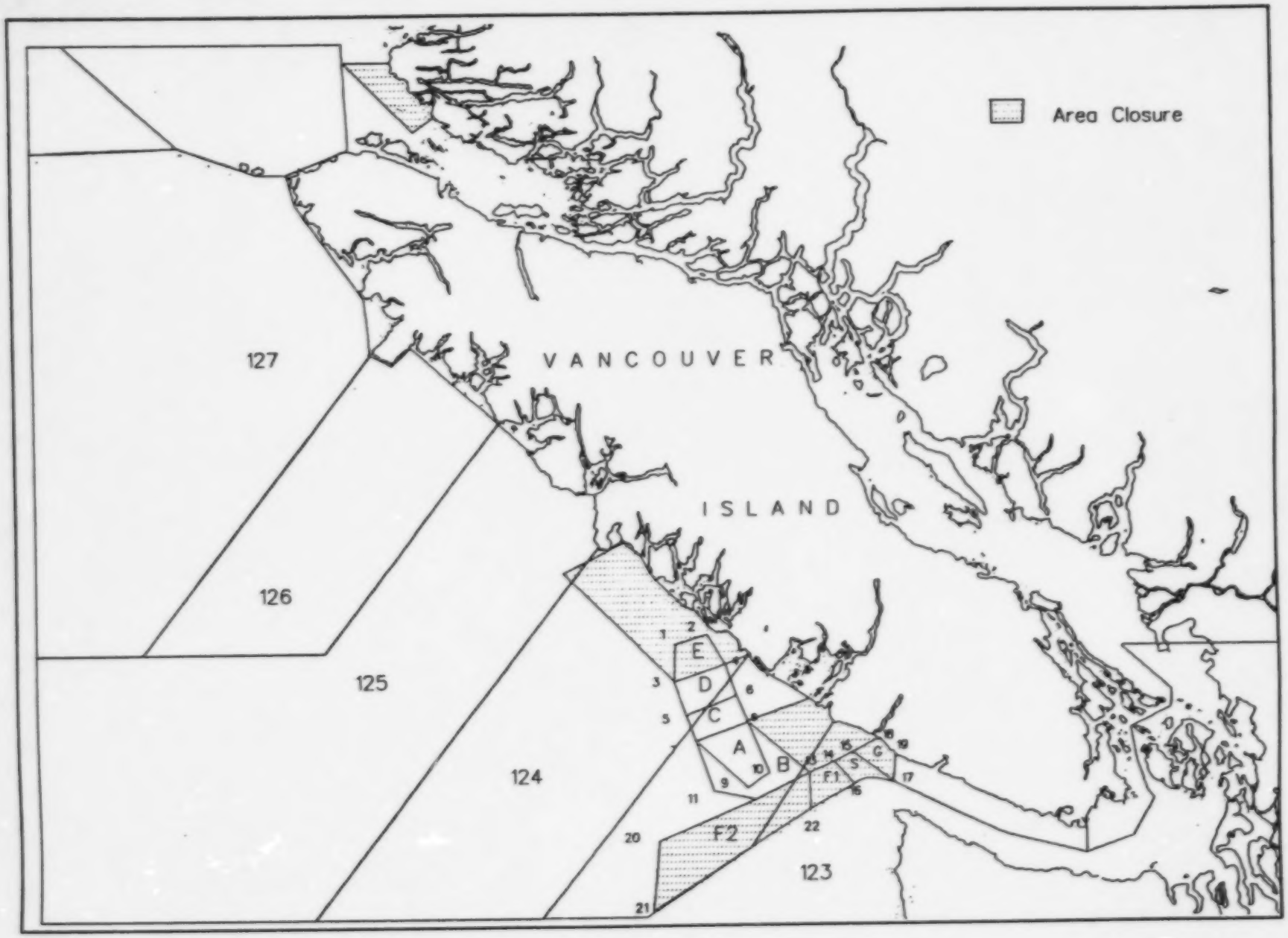



Figure 8. Area closures in effect from August 2 to August 5.

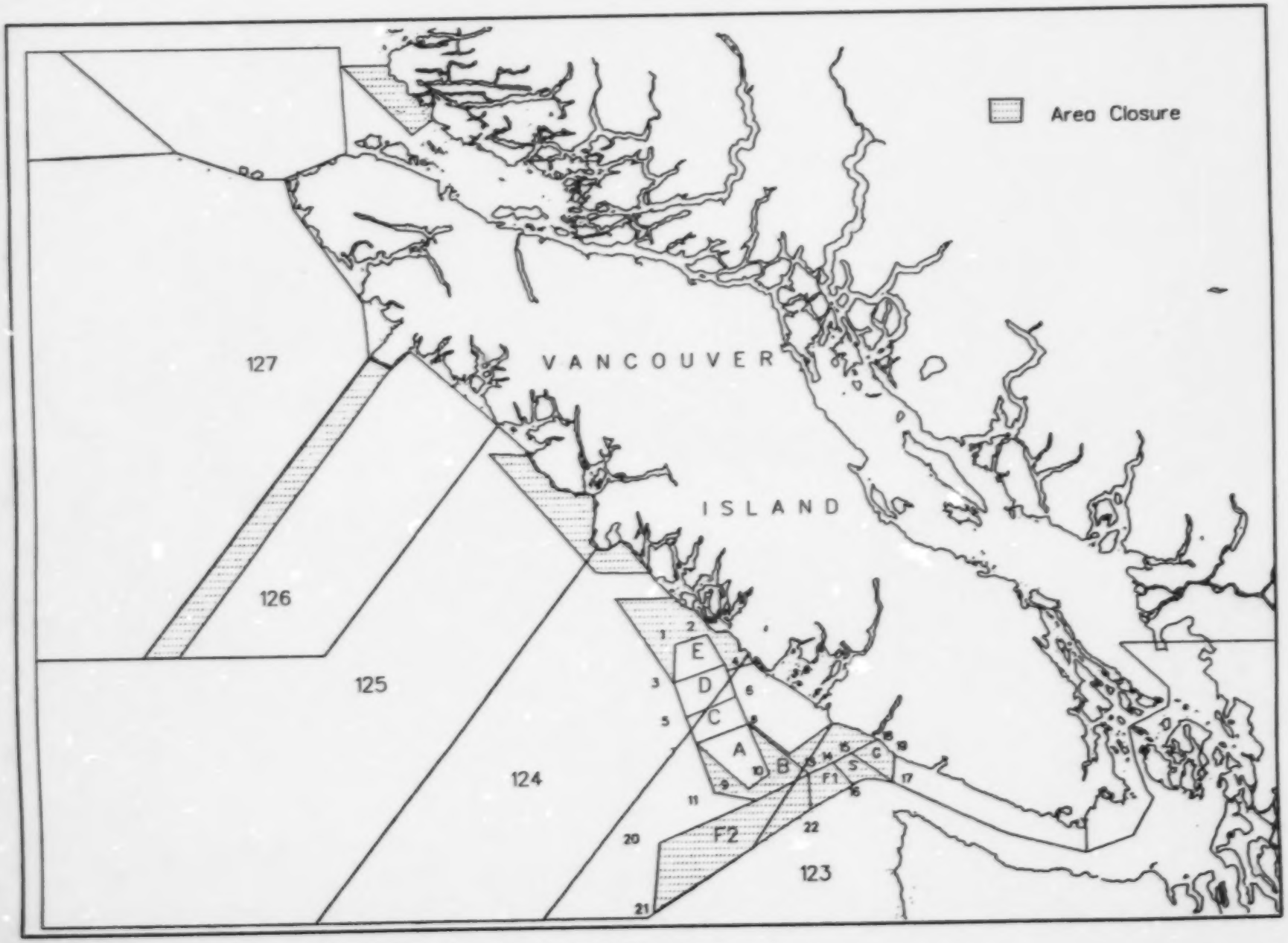



Figure 9. Area closures in effect from August 12 to August 18.

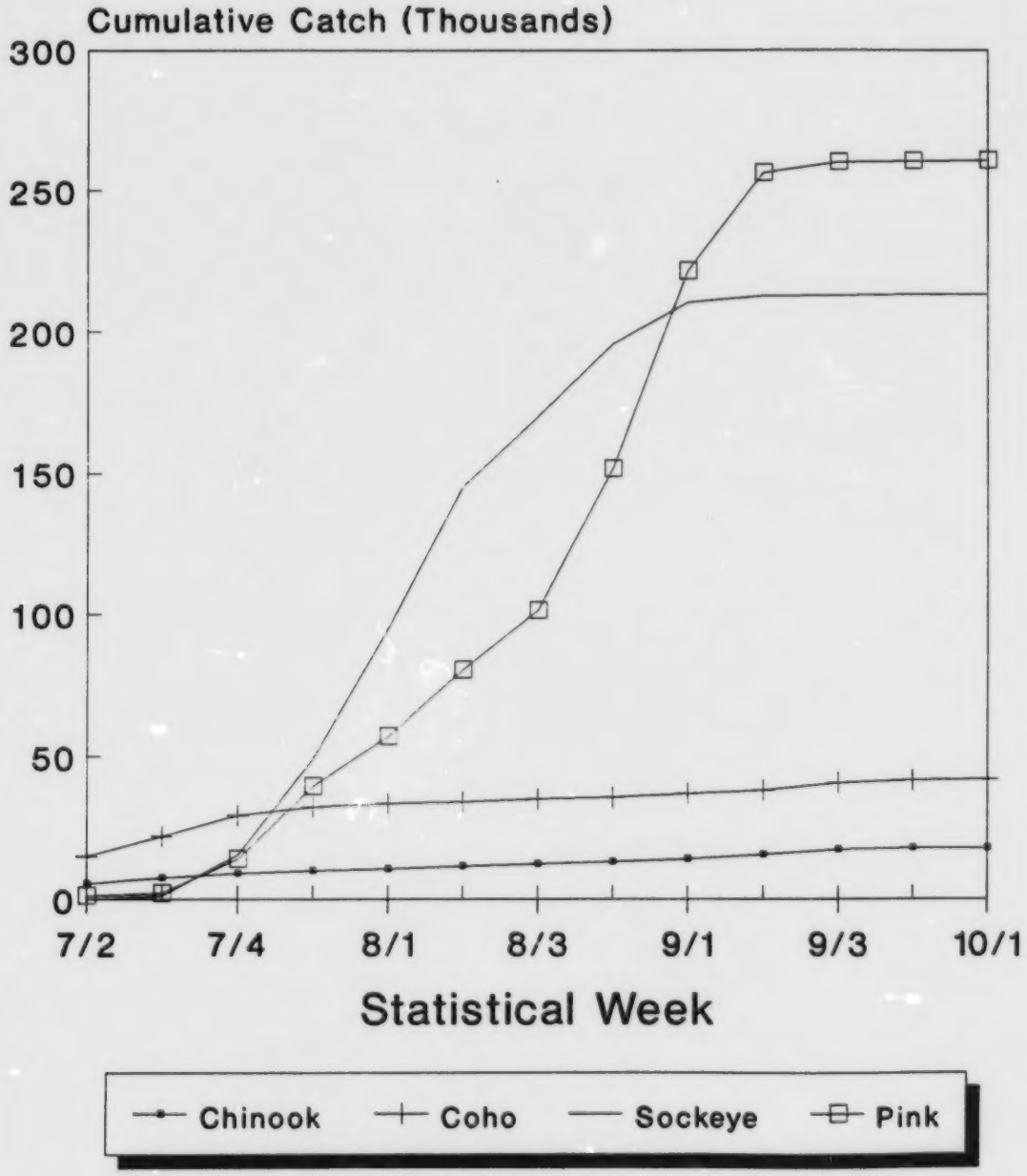



Fig. 10. Johnstone Strait troll catch for all species. Chinook catch Area 12 only.

# APPENDICES

# APPENDIX 1

## NEWS RELEASES AND COMMUNICATIONS REGARDING 1989 SALMON ALLOCATIONS

# BACKGROUNDER
# FICHE d'INFORMATION

June 14, 1989

## SALMON ALLOCATION PLAN - 1989

Commercial salmon fishing plans in 1989 reflect the departmental goals of meeting escapement targets while harvesting available surpluses in a manner that ensures international and domestic allocations are achieved. As in previous years, salmon allocation has been based on historic cycle year averaging and, since 1985, on recommendations provided by industry advisory groups.

When no consensus was achieved by CFIC this year, and therefore no recommendations provided to the Minister, the Department of Fisheries and Oceans was asked by the Minister to develop recommendations on allocation. Considerations in developing the plan include the views of industry representatives, historic cycle year allocations and catches, and economic performance of each gear type. Analysis of this information generally reveals that the share of landed value attributable to an average vessel by gear has not changed substantially over time.

Because it directly effects the earnings of fishermen, allocation in the salmon fishery is of particular import. Allocation provides some degree of certainty to fishermen in an otherwise uncertain environment, and allows for business planning without fear that catch, and therefore expected incomes, will be radically altered. Substantial changes to allocation would be destabilizing for the industry.

With these concerns in mind, the Department established objectives to guide allocation decisions for 1989. Those objectives include:

.../2

1) Maintain industry stability by using cycle year historic allocations as the basis for allocation.

2) Adjust troll catches to maintain average troll earnings by allocating access to non-traditional troll species (ie. sockeye).

3) Maintain a viable gulf troll fishery without encouraging more trollers to enter that fishery.

4) Improve relative position of gillnet vessels (noting that this sector has seen the least improvement in gross earnings per vessel in the last 20 years).

5) Maintain traditional fishing patterns.

6) Ensure allocations are manageable.

Following is the 1989 Allocation plan.

NORTH COAST

SOCKEYE TROLL

Statistical Areas 1,3,4 and 5

Troll catch to remain incidental and not to exceed 5% of the total all-gear non-Fraser sockeye catch.

Statistical Areas 6, 7, 8, 9 and 10

The troll fishery on sockeye in these areas should not escalate.

NET

Statistical Areas 1,3,4 and 5

Gillnet 76% and seine 24% of the total net catch in these areas with the primary objective to harvest the available surplus of sockeye salmon while protecting the non-target species.

Statistical Areas 6, 7 and 8

Traditional fishing patterns to be maintained with an incidental catch of sockeye expected.

Statistical Areas 9 and 10

Net fishing restricted to gillnets only.

PINK TROLL

FRASER

The North coast catch of Fraser River and other Southern bound pink stocks will be part of the outside troll allocation of 29%.

Statistical Area 1

The Area 1 treaty arrangement was negotiated in 1988, in part to allow trollers to harvest Skeena pink salmon that were expected to exceed target escapements after the maximum allowable net fishing period. The Area 1 troll fishery will be managed based on in season Skeena pink escapement and net catch information in addition with Fraser, Alaskan and Central coast pink assessments. Part or all of Area 1 may close to pink trolling prior to reaching 1.7 million if stocks are weak. Pink trolling may be extended past 1.7 million in the 'domestic management zone' if stock strength warrants.

Statistical Areas 2 through 10

The North coast Areas 2 through 10 troll catch ceiling is 4% of the all-gear catch of North coast pinks. The closure of Area 2W South of Buck Point to trolling after the Fraser sockeye allocation is reached will also limit the pink troll fishery in the North coast.

NET

Statistical Areas 1, 3, 4 and 5

Gillnet 28% and seine 72% of total catch with the primary objective to harvest the available surplus of pink salmon while protecting the non-target species.

Statistical Areas 6, 7, 8, 9 and 10

Maintain traditional fishing patterns with the primary objective to harvest available surpluses and ensure that escapement goals are met.

CHUM TROLL

Statistical Areas 1 to 10

Troll fisheries on this species should not escalate.

NET

Statistical Areas 1 to 10

Traditional fishing patterns to be continued to maintain past catch shares.

CHINOOK TROLL

Statistical Areas 1 to 11

The 1989 troll allocation is 203,000 chinook based on a total Pacific Salmon Treaty catch ceiling of 263,000 for troll, net and sport fisheries. In Areas 10, 11, 110 and 111 the total chinook catch ceiling is 21,000 (this is part of the 203,000).

NET

The net fisheries on passing stocks in Areas 1 and 2W will be managed to minimize the chinook catch, and each fishery will be closed if the chinook catch in that area reaches 5000.

SOUTH COAST

PINKS SOUTHERN BOUND

TROLL

Outside Troll Areas

The Outside troll allocation is 29% of the Canadian Total Allowable Catch (T.A.C.) of Southern bound pinks, wherever caught.

Inside Troll Areas

The Inside troll allocation is 4% of the Canadian T.A.C. of Southern bound pinks, wherever caught.

NET

Statistical Areas 11 to 29

Gillnet 9% and seine 58% of the Canadian T.A.C. of Southern bound pinks, wherever caught.

SOCKEYE FRASER RIVER BOUND

TROLL

Outside Troll Areas

The Outside troll allocation is 10% of the Canadian T.A.C. of Fraser bound sockeye, wherever caught.

Inside Troll Areas

The Inside troll allocation is 2% of the Canadian T.A.C. of Fraser bound sockeye, wherever caught.

NET

South Coast Net Areas (excluding Barkley Sound)

The allocation for seines is 55% and 33% for gillnets for Fraser bound sockeye, wherever caught.

BARKLEY SOUND

Statistical Area 23

No commercial net openings are anticipated. Should surpluses be identified the allocation target is 60% for seines and 40% for gillnets.

CHUM TROLL

Outside Troll Areas

The troll fishery on this species should not escalate.

Inside Troll Areas

The allocation of fall chums will be capped by a ceiling, not to exceed 1% of the T.A.C. of inside stocks. Troll fisheries for chum salmon are expected to occur after late September. Trollers will have equal time and area as net fishermen, but on different days following the net fisheries.

NET

Net Areas West Coast Vancouver Island

Commercial openings are anticipated for Nitinat only. The initial early season allocation of 50% seine and 50% gillnet is the same as for the past two years, and the early season catch is expected to be approximately 264,000 chums. Fishing times on subsequent fisheries will be determined by the West Coast Sub-committee of the South Coast Advisory Committee in conjunction with D.F.O.

Inside Net Areas

Gillnet allocation 35% and seine allocation 65%.

CHINOOK TROLL

Outside Troll West Coast Vancouver Island

The outside troll ceiling is 309,000 as per the Pacific Salmon Treaty. This level accounts for the overages to the 360,000 ceiling during the last two years.

Inside Troll

The inside troll allocation is 31,000. This allocation is the same as last year in order to accomplish a 20 percent reduction in the harvest of Georgia Strait chinook.

COHO TROLL

Outside Troll West Coast Vancouver Island

The Outside troll ceiling is 1.8 million pieces as per the Pacific Salmon Treaty.

# APPENDIX 2

## INFORMATION BULLETIN:

## 1989 SALMON TROLL FISHING PLANS

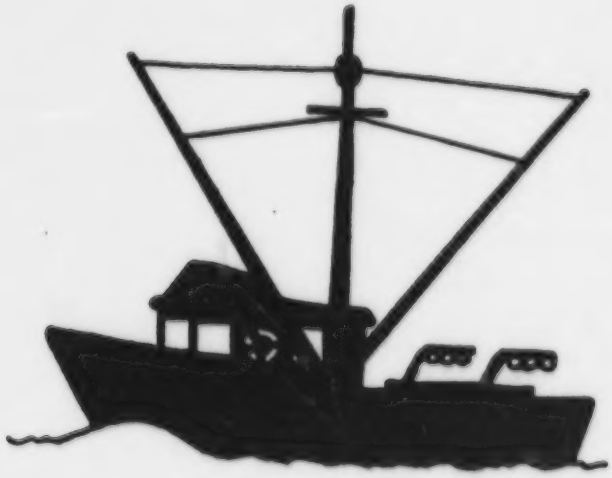
## STRAIT OF GEORGIA

Scientific Excellence • Resource Protection & Conservation • Benefits for Canadians
Excellence scientifique • Protection et conservation des ressources • Bénéfices aux Canadiens

# 1989 Salmon Troll Fishing Plans

## Strait of Georgia

June 14, 1989



Fisheries and Oceans Pêches et Océans

Canada

# 1989 STRAIT OF GEORGIA TROLL FISHING PLANS

## ABUNDANCE

Chinook - Modest increase in abundance over 1988.

Coho - Difficult to assess. Expecting return of average abundance.

Sockeye - The Canadian Commercial T.A.C. for 1989 is predicted to be 7.1 million sockeye with a total run size of 13 million.

Pink - A) The predicted Canadian Commercial T.A.C. of Fraser River stocks is 7.9 million pinks with a total run size of 17 million. The expected Canadian catch of all southern-bound pinks is 10.4 million.

B) Study area pink returns for 1989 are expected to be well below average except for mid Vancouver Island which has a small surplus of 317,000 pinks. It is anticipated that these stocks will be harvested incidently during fisheries for Fraser sockeye and pink stocks.

Chum - The total predicted run size for the chum study area is 3.2 million. The total predicted catch is 500 - 600,000 chums for the inside waters.

## OVERVIEW

The 1989 Troll Fishing Plan is for Statistical Areas 13 to 18 and 29. The season is scheduled from July 1, 1989 to September 30 with a chum only fishery during the fall.

1. Fishing for chinook, coho, pink and chum salmon is permitted commencing July 1, 1989.

2. The minimum size limit for troll caught chinook is 62 cm nose-fork length. This is the same size limit in effect during the 1987 and 1988 season.

3. The chinook catch allocation for 1989 is 31,000. If, as expected, the chinook ceiling is reached by late August, non-retention, non-possession and single barbless hooks will be implemented. Barbed hooks however, will be permitted during directed sockeye or pink fisheries. However, if the chinook ceiling is achieved earlier than expected i.e. early August, measures will be implemented to minimize shaker mortalities.

4. The sockeye allocation is 2% of the Canadian T.A.C. and therefore the expected Inside Troll share is 142,000. Retention of sockeye is to be coordinated with the first seine opening in Johnstone Strait, which is expected to open the week beginning July 16, 1989. At that time all areas previously open will remain open 7 days per week. Additionally, trollers will be allowed to fish in net areas of Johnstone Strait and off the Fraser River with equal time but different periods each week after net openings. Sub areas may be adjusted to allow a pacing of the sockeye catch to achieve a full retention fishery during the pink season.

   The concept of this plan is to minimize non-retention fisheries with sockeye and pink and to maintain fishing opportunities and to achieve a split in the North-South catch.

5. The pink allocation is 4% of the Canadian catch of southern bound stocks and therefore the expected Inside Troll share is 416,000. Pink retention will be permitted as of July 1, 1989, but the catch up to August will be from study area stocks and is expected to be minimal. Main abundance of pinks will be from Fraser stocks.

6. The allocation of fall chums will be capped by a ceiling, not to exceed 1% of the T.A.C. of inside stocks. Out of this total T.A.C. a troll catch of 50,000 - 60,000 is expected. Troll fisheries are likely to occur after late September with equal fishing time but different periods each week after net fisheries.

7. After respective species quotas are taken, the retention and possession of those species will be prohibited pursuant to Sections 5(2) of the B.C. Fishery (general) Regulations and 5.2 of the Pacific Commercial Salmon Fishery Regulations. Subsequent to recent court decisions, the D.F.O. will enforce these sections.

**FISHING PLAN DETAILS**

A) July 1, 1989 (For the purpose of achieving chinook allocation and maintaining harvest rates of coho the following fishing plan is proposed.

   As of July 1, 1989 0001 hours commercial trolling will be permitted 7 days each week with barbed hooks in the following areas with retention of chinook, coho, pink and chum salmon as follows:

   Area 13. Subareas 13-1 to 13-3 and 13-14 to 13-20 and 13-23 only open. Note, subareas to 13-10 and 13-27 to 13-32 will remain closed until the week beginning July 16.

   Area 14. all Subareas open 7 days each week except 14-14 and 14-11 (Comox Harbour) which are closed.

Area 15, all Subareas open 7 days each week except 15-6 (Toba Inlet) which is closed.

Area 16, all Subareas open 7 days each week.

Area 17, all Subareas open 7 days each week except 17-7 (Ladysmith Harbour, and 17-14 (Nanaimo Harbour) which remains closed.

Area 18, all Subareas open except 18-8 (Cowichan Bay) which remains closed.

Area 29, Subarea 29-5 open 7 days each week. Subareas 29-1 to 29-4 and 29-6 remain closed.

B. Scheduled for week beginning July 16, 1989 to obtain allocation of sockeye salmon and to complete pink allocation primarily from Fraser stocks.

Fishing is permitted for all species as follows:

Area 13 Subareas 13-1 to 13-3 (including Duncan Bay) and 13-14 to 13-20 and 13-23 open 7 days each week.

A troll opening in Subareas 13-7 to 13-10 and 13-27 to 13-32 would follow the gillnet fishery. The troll fishery would start on either Thursday or Friday of each week and end no later than 1700 hrs Sundays. For example, a 3 day troll fishery would begin at 0001 hrs Friday and end at 1700 hrs Sunday.

Area 14, all subareas open 7 days each week except 14-14 and 14-11 (Comox Harbour) which are closed.

Area 15, all subareas open 7 days each week except 15-6 (Toba Inlet) which is closed.

Area 16, all subareas open 7 days each week.

Area 17, all subareas open 7 days each week except 17-7 (Ladysmith Harbour), and 17-14 and 17-15 (Nanaimo Harbour) and a portion of 17-9 (Chemainus River mouth) which is closed.

Area 18, Subareas 18-8 (Cowichan Bay) closed. Subarea 18-2 to 18-10 open 7 days each week. For subareas 18-1, and 18-11 trolling will be permitted each week following the net fishery (See Note 4).

Area 29, Subarea 29-5 open 7 days each week. For subareas 29-1 to 29-4 and 29-6 trolling will be permitted each week following the net fishery. The "Banana" area will open each week following the net fishery with non retention of chinook salmon. Non retention of chinook in this area also pertain to the sport fishery. (See Note 4).

NOTE 1 Fishing times and areas are subject to adjustment given in-season assessment of run sizes and timing.

NOTE 2 All openings listed are in effect only until the catch limits are reached.

NOTE 3 In addition to those closures listed above, some local river mouth boundaries are in effect. All sport fishing spot closures are also closed to commercial trolling.

NOTE 4 Trolling in Areas 18-1, 18-11 and 29-1 to 29-4 and 29-6 will be permitted each week following the net fishery and is scheduled to have time of equal duration to the gillnet fishery. The troll fishery in the above listed areas is expected to start on the Wednesday or Thursday each week.

NOTE 5 For Clarification: "GREY AREA"

Management Area 12
As of July 1, 0001 hours, trolling for chinook and coho only is permitted in subareas 12-10 and 12-13 (Deserters Group) 7 days per week for both Inside and Outside licensed vessels. In all other Subareas trolling is restricted to net fishing times and areas for both Inside and Outside licensed vessels with non-retention of chinook for vessels with Inside licences. Troll fishing opportunity in subareas 12-10 and 12-13 will be limited if the chinook troll catch in all of the Area 12 exceeds 5,000 pieces.

NOTE 6 Update troll information for inside trollers will be available by phoning the following numbers for 24 hours recorded message:

Nanaimo - 754-0281
Campbell River - 287-2151

# APPENDIX 3

## INFORMATION BULLETIN:

## 1989 SALMON TROLL FISHING PLANS

## WCVI AND NORTH COAST

Scientific Excellence • Resource Protection & Conservation • Benefits for Canadians
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# 1989 Salmon Troll Fishing Plans

## West Coast Vancouver Island and North Coast

June 14, 1989

Fisheries and Oceans Pêches et Océans

Canada

# 1989 COMMERCIAL SALMON TROLL FISHERY PLANS FOR THE W.C.V.I.

This bulletin provides details regarding the 1989 salmon troll fishing plan for the West Coast of Vancouver Island. This plan has been developed through consultations with the Outside Troll Advisory Committee (representatives of fishing organizations, buyers and the Department of Fisheries and Oceans).

## SUMMARY

The minimum size limit for troll caught chinook is 67 cm in "nose to fork length" and 56 cm for the head off length". These are the same size limits in effect during the 1988 season.

Area closures will be in place at the onset of the season to slow the catch rate. In 1989 the "Green Line Red Line Concept" used in 1988 has been incorporated to signal catch levels that require management action. Certain area closures will be used to accelerate or slow the catch rate, as required.

The Department will continue enforcement activities both on the grounds and at landing points.

1. Catches for chinook and coho are limited to 309,000 and 1.8 million pieces. The 1989 chinook ceiling is lowered from 360,000 to compensate for overages in 1988 and 1987. The total 1989 coho catch ceiling could be as high as 1.935 million pieces. The additional 135,000 pieces would be harvested due to the 1988 shortfall, depending on abundance.

2. The outside troll allocation of Fraser River Sockeye is 10% of the Canadian T.A.C. and the allocation of southern bound pink salmon is 29%. These allocations apply to the stocks wherever caught.

3. Trolling for chinook, coho, sockeye, pink, and chum will start July 1, 1989.

4. Specific areas will be closed at the onset of the season to slow the catch rate of chinook. One or more of these areas will be opened if catch rates fall below pre-established, Green Line levels.

5. Area 11 (outside portion only) open July 1 and a 21,000 chinook catch ceiling for Areas 110, 111, 11 and 10.

6. Swiftsure Bank closure has been modified for 1989. Swiftsure (Area S) will remain closed in accordance with the Pacific Salmon Treaty, unless required to catch the pink or sockeye allocation. A new area, "G", (previously part of Swiftsure) has been defined to allow access to pink and sockeye.

7. Area E and Area 10 and 11 closure boundaries have been modified to provide additional trolling opportunities.

8. The management objective is to extend the season to mid September, 1989. No trolling will be permitted after September 30, 1989.

9. A recorder phone service from Tofino for W.C.V.I. troll information is planned for 1989. Industry will be provided with the number when the service is installed.

10. Proposed management actions and catches will be reported Thursday each week with additional reporting days added if required.

DETAILS

CATCH LIMITATIONS:

As provided for in the Pacific Salmon Treaty, the 1989 troll catch for the West Coast of Vancouver Island shall not exceed 309,000 chinook and 1.8 million coho salmon in statistical Areas 21, 23, 24, 25, 26, 27, 121, 123, 124, 125, 126, 127, and 130-1. The 1989 chinook ceiling is lowered from 360,000 to compensate for overages in 1987 and 1988. Due to the coho shortfall in 1988 an additional 135,000 pieces may be harvested if abundance warrants it. Troll caught chinook from Area 12 (not to exceed 5,000 fish) will be accounted for within the 309,000 chinook allocation. The Canadian total allowable commercial catch of Fraser River sockeye, based on expectations, is 7.1 million with an outside troll allocation of 10% and expected catch of 710,000. The predicted Canadian commercial T.A.C. of Fraser River pink salmon is 7.9 million. The expected Canadian catch of all southern-bound stocks is 10.4 million, and the outside troll allocation of 29% equals 3,016,000.

TROLLING DATES:

Trolling for chinook, coho, sockeye, pink, and chum salmon will commence at 0001 hours on July 1, 1989 and may continue to mid September unless the quotas are achieved prior to this time. If the quotas are not achieved the fishery will continue until September 30, 1989 when all trolling will close for the balance of the season.

CHINOOK:

RED LINE AND GREEN LINE:

The troll management plan has been developed to minimize, where possible, non-retention fisheries and to slow the catch rate of chinook. The catch rate is not expected to be as high as 1987 or 1988. Boundaries for Chinook Conservation Areas A to D remain the same as 1988. The boundaries for Area E and Swiftsure have been redrawn and a new Area G (previously part of Swiftsure) has been added (Figure 1). Areas A through E, Area G and S will be closed at the onset of the season, however, Area E will open July 12 if the chinook catch is under the red line and Area G will open in concert with the first net opening in Area 20.

As in previous years, a red line has been developed. In the past, when catches exceeded the red line, additional closures were implemented. This year, however, the season is commencing with the maximum number of chinook closures in place. It is believed that additional closures over those proposed would cause undue disruption and seriously threaten the opportunity to achieve the allocation of other species.

The green line like the red line, will signal catch levels that require management action. When catch levels fall below the green line, area closures will be lifted to accelerate chinook catches. Should catch levels increase too rapidly and exceed red line values, then closures will be reinstated. Red and green lines are shown in Figure 2 and Table 1.

The order of opening closed areas in response to the red line is as suggested below unless information in-season indicates otherwise.

OPENING SEQUENCE

CHINOOK CONSERVATION ZONE

| | |
|---|---|
| 1 | E |
| 2 | D |
| 3 | C |
| 4 | A and B |

Notice for area closures will be a minimum of 48 hours while openings may be announced for midnight of the same day. If chinook non-possession is implemented then Areas A, B and C will close to minimize shaker impact.

COHO:

Coho abundance is expected to be 10% greater than in 1988. However, should abundance and catch exceed expectations the "960 line" closure, as defined, will be implemented. Both a Red and Green Line have been developed for coho (Figure 3 and Table 2). The predicted coho catches are for 1.8 million pieces to be reached by mid September. If coho abundance is greater than expected there is the possibility of an additional catch of 135,000 due to the 1988 shortfall.

The notification time for area openings and closures are the same as for chinook closures. Non-possession will be implemented if the ceiling is reached.

SOCKEYE:

Fraser River sockeye run size is predicted to be 13 million with a Canadian commercial T.A.C. of 7.1 million. The outside troll allocation has been set at 10% of the T.A.C. or 710,00 pieces. D.F.O. predicts tht this level of catch should be achieved no later than the end of July. Once the allocation has been achieved sockeye non-retention and non-possession will be implemented. If the level of sockeye shaking becomes high, specific locations may have to be closed until most of the sockeye leave the area.

Catches coastwide will be sampled for composition of Fraser River stocks by the Pacific Salmon Commission.

Restart

In the event sockeye run size is upgraded during the season the outside troll fishery will re-open with the retention of sockeye to attain the adjusted troll TAC by the following procedure:

(1) When an upgrade in run size results in a 5% or greater increase to the outside troll TAC retention of sockeye will resume to attain the additional catch.

(2) Retention and possession of sockeye will only be permitted within the designated fishing areas in the approach areas of Johnstone and Juan de Fuca Straits. The approach areas are defined as:

(a) Area 11 (outside portion only) and Area 12.
(b) Management Areas 20-1 and Swiftsure G.

(3) Notice of openings will be a minimum of 24 hours and closures could be as early as midnight of the same day. The net fishing portions of areas listed in (2) above will close to trolling 24 hours in advance of net fishing times.

(4) Retention of other salmon species may be permitted in designated sockeye fishery catch up zones if allocations have not been reached.

PINK:

A total run of 22.8 million southern bound (17.0 million Fraser River and 5.8 million non-Fraser stocks) pink salmon is predicted for 1989. The Canadian T.A.C. of Fraser River pink salmon is 7.9 million, and the total expected Canadian catch of all these stocks is 10.4 million. The Outside Troll allocation is 29% or 3,016,000 pinks based on the pre-season forecast.y

Restart

In the event that the pink salmon run size is upgraded during the season the fishery will re-open with retention of pink salmon to attain the adjusted allocation target by the same criteria as developed for sockeye.

NOTE: If sockeye shakers become a significant problem the department will consider implementation of coho and chinook only fisheries in specified locations or in extreme circumstances a total fishing closure in some localized areas.

CONSERVATION OF LOWER GEORGIA STRAIT CHINOOK:

In 1989 a separate ceiling of 21,000 chinooks is established for Areas 111, 110, 11 and 10. The increase from 1988's catch ceiling of 19,000 is in keeping with the 1989 increased North Coast allocation. The catch ceiling plus the closure of parts of Areas 10 and 11 shown in Figure 4 addresses the Minister's conservation directive to reduce the harvest rate of Lower Georgia Strait chinook stocks by 20% in the Lower Central Coast troll fishery. It should be noted, however, that the ceiling for Areas 111, 110 and Area 11 is still part of the overall ceiling in the North Coast (1-11). If the catch ceiling is achieved prior to other allocations being obtained chinook non-possession and non-retention will be imposed.

FISHING PLAN:
The detailed fishing plan is as follows:

OUTSIDE SURF LINE (Areas 21, 121 to 127, 130-1 and 111)

As of July 1, 1989 at 0001 hours, the following management areas will be open until further notice to commercial salmon trolling for chinook, coho, sockeye, pink and chum:

Areas 121 to 127 inclusive and 130-1, 111 except as follows:
(see next page for chinook conservation closures)

# CHINOOK CONSERVATION CLOSURES
## AREA BOUNDARY COORDINATES

| COORDINATE NUMBER | LORAN-C | | LATITUDE (Degrees, Minutes) | LONGITUDE |
|---|---|---|---|---|
| | **Chinook Conservation Area A** | | | |
| 7 | 5990-Y-29090 | 5990-Z-41570 | 48°39.25'N | 125°57.22'W |
| 8 | 5990-Y-29090 | 5990-Z-41650 | 48°43.68'N | 125°37.62'W |
| 9 | 5990-Y-28980 | 5990-Z-41650 | 48°28.63'N | 125°37.72'W |
| 10 | 5990-Y-28990 | 5990-Z-41680 | 48°32.00'N | 125°30.20'W |
| | **Chinook Conservation Area B** | | | |
| 7 | 5990-Y-29090 | 5990-Z-41570 | 48°39.25'N | 125°57.22'W |
| 8 | 5990-Y-29090 | 5990-Z-41650 | 48°43.68'N | 125°37.62'W |
| 11 | 5990-Y-29000 | 5990-Z-41600 | 48°28.18'N | 125°50.70'W |
| 12 | 5990-Y-28960 | 5990-Z-41660 | 48°26.62'N | 125°35.20'W |
| 13 | 5990-Y-28960 | 5990-Z-41740 | 48°31.80'N | 125°15.30'W |
| | **Chinook Conservation Area C** | | | |
| 5 | 5990-Y-29140 | 5990-Z-41550 | 48°45.30'N | 126°01.50'W |
| 6 | 5990-Y-29140 | 5990-Z-41630 | 48°49.40'N | 125°41.95'W |
| 7 | 5990-Y-29090 | 5990-Z-41570 | 48°39.25'N | 125°57.22'W |
| 8 | 5990-Y-29090 | 5990-Z-41650 | 48°43.68'N | 125°37.62'W |
| | **Chinook Conservation Area D** | | | |
| 3 | 5990-Y-29200 | 5990-Z-41530 | 48°52.80'N | 126°05.40'W |
| 4 | 5990-Y-29200 | 5990-Z-41610 | 48°56.55'N | 125°46.25'W |
| 5 | 5990-Y-29140 | 5990-Z-41550 | 48°45.30'N | 126°01.50'W |
| 6 | 5990-Y-29140 | 5990-Z-41630 | 48°49.40'N | 125°41.95'W |
| | **Chinook Conservation Area E** | | | |
| 1 | 5990-Y-29260 | 5990-Z-41530 | 49°01.34'N | 126°04.05'W |
| 2 | 5990-Y-29260 | 5990-Z-41580 | 49°03.39'N | 125°52.20'W |
| 3 | 5990-Y-29200 | 5990-Z-41530 | 48°52.80'N | 126°05.40'W |
| 4 | 5990-Y-29200 | 5990-Z-41610 | 48°56.55'N | 126°46.25'W |

## CHINOOK CONSERVATION CLOSURES
## AREA BOUNDARY COORDINATES

| COORDINATE NUMBER | LORAN-C | | LATITUDE (Degrees, Minutes) | LONGITUDE (Degrees, Minutes) |
|---|---|---|---|---|
| | **Swiftsure (Area S)** | | | |
| 14 | 5990-Y-28960 | 5990-Z-41780 | 48·34.34'N | 125·05.85'W |
| 15 | 5990-Y-28960 | 5990-Z-41810 | 48·36.13'N | 124·58.98'W |
| 16 | 5990-Y-28904 | 5990-Z-41810 | 48·29.30'N | 124·58.00'W |
| 17 | 5990-Y-28875 | 5990-Z-41870 | 48·29.62'N | 124·34.55'W |
| (Intersection of Bonilla-Tatoosh Line and Canada-U.S. Boundary) | | | | |
| | **Swiftsure (Area G)** | | | |
| 15 | 5990-Y-28960 | 5990-Z-41810 | 48·36.13'N | 124·58.98'W |
| 18 | Loran-C Line 5990-Y-28960 and Dare Point | | | |
| 17 | 5990-Y-28875 | 5990-Z-41870 | 48·29.62'N | 124·34.55'W |
| 19 | Bonilla Point Navigation Light | | | |

In the event of greater than expected coho abundance, the following closure will be implemented:

**960 Line (Area F)**

Defined as that area to the SE of Loran-C line 5990-Y-28960.

| COORDINATE NUMBER | LORAN-C | | LATITUDE (Degrees, Minutes) | LONGITUDE (Degrees, Minutes) |
|---|---|---|---|---|
| 20 | 5990-Y-28960 | 5990-Z-41530 | 48·16.75'N | 126·11.55'W |
| 14 | 5990-Y-28960 | 5990-Z-41780 | 48·34.34'N | 125·05.85'W |
| 21 | 5990-Y-28868 | 5990-Z-41530 | 48·01.62'N | 126·14.06'W |

NOTE: The 960 Line Area F will be open at the beginning of the season.

**Inside Surf Line (Area 23 to 27, Area 11 and 12)**

As of July 1, 1989 at 0001 hours, the following areas will open to trolling for chinook, coho, and chum salmon only as follows:

Area 23 - All Area 23 open, except Sub-areas 23-1 and 23-2 which remain closed until further notice.

Area 24 - All Area 24 open until August 1 for chinook, coho and chum. On August 1, 1989 Sub-areas 24-2, 24-6 and 24-8 will remain open for chinook, coho and chum only. The remainder of Area 24 is closed for all species.

Area 25 - Remains closed to trolling.

Area 26 - Remains closed to trolling except Area 26-11 which is open July 1 to all species.

Area 27 - Open until August 1 except 27-7, 27-8, 27-9, 27-10, and 27-11. Effective August 1 all of Area 27 closed to trolling.

Area 11 - The following portions of Area 10 and 11 will be closed to trolling for all species:

(a) Those portions of Subareas 10-1 and 10-2 lying south of a line due west from Dugout Rock to the Surf Line.

(b) Those portions of Subareas 11-1 and 11-2 lying east of a line from the northwest corner of Subarea 11-1 to Bright Island in the Buckle Group, then to the mainland following the Area 11 and 12 boundary.

Table 1

CHINOOK TROLL RED AND GREEN LINE
CATCHES FOR WCVI FOR 1989

| STAT WEEK | IDEAL CATCH | RED LINE PERCENT | RED LINE CATCH | GRN LINE CATCH | GRN LINE PERCENT |
|---|---|---|---|---|---|
| 7/1 | 63,163 | 30.0% | 82,112 | 41,056 | 35.0% |
| 7/2 | 118,030 | 26.0% | 148,717 | 81,440 | 31.0% |
| 7/3 | 153,297 | 22.0% | 187,022 | 111,906 | 27.0% |
| 7/4 | 187,194 | 18.0% | 220,889 | 144,140 | 23.0% |
| 7/5 | 218,970 | 14.0% | 249,626 | 177,366 | 19.0% |
| 8/1 | 245,066 | 10.0% | 269,573 | 208,306 | 15.0% |
| 8/2 | 264,560 | 7.0% | 283,080 | 235,459 | 11.0% |
| 8/3 | 283,022 | 4.0% | 294,343 | 263,210 | 7.0% |
| 8/4 | 291,773 | 2.0% | 297,608 | 283,020 | 3.0% |
| 9/1 | 305,520 | 1.0% | 308,575 | 302,465 | 1.0% |
| 9/2 | 309,000 | 0.0% | 309,000 | 309,000 | 0.0% |

Comments:
1) Ideal catch is based on 1985-88 average sales slip catches.
2) Week 7/1 is July 1 to 8.

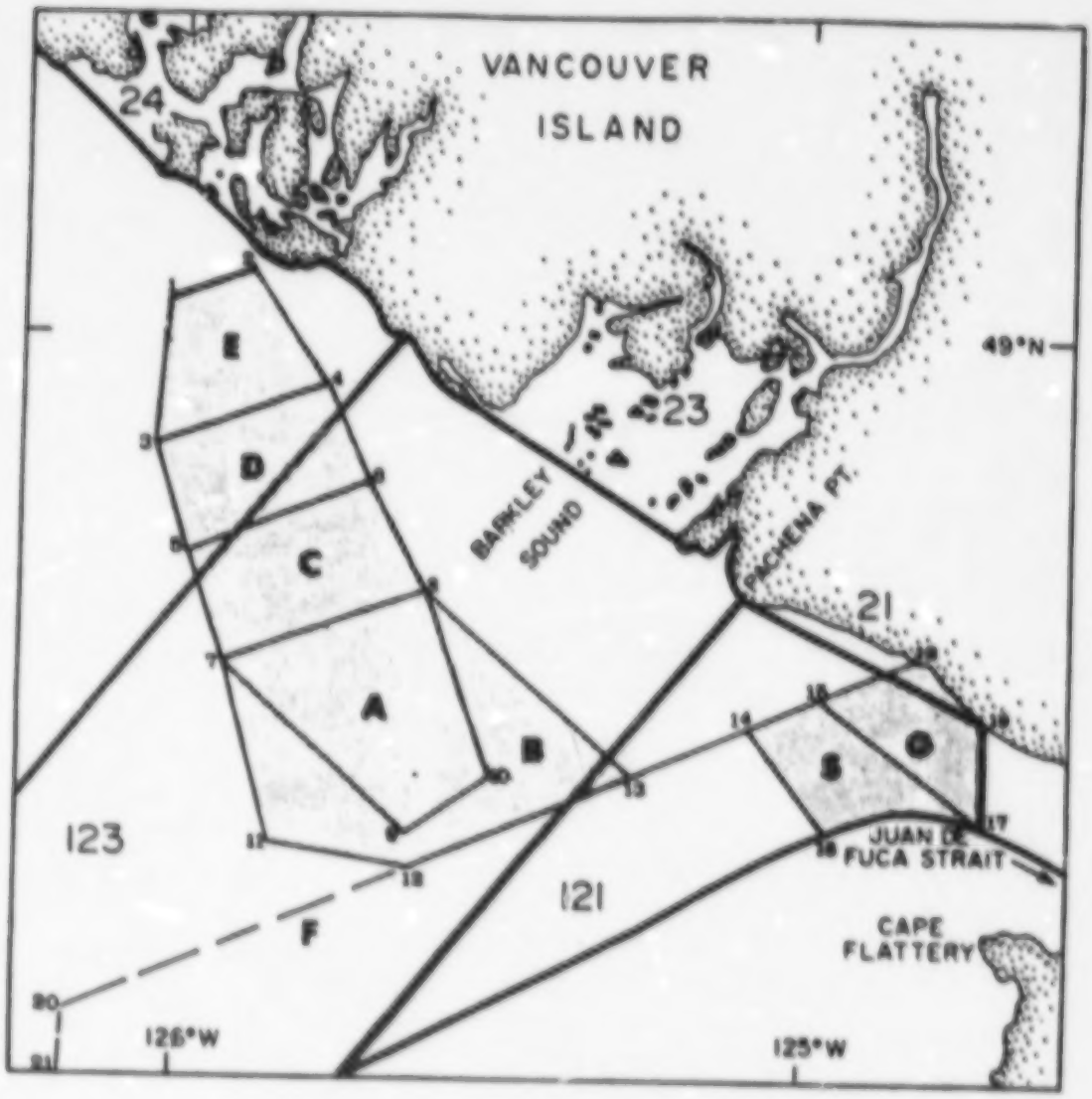
Table 2

COHO TROLL RED AND GREEN LINE
CATCHES FOR WCVI FOR 1989

| STAT WEEK | IDEAL CATCH | RED LINE PERCENT | RED LINE CATCH | GRN LINE CATCH | GRN LINE PERCENT |
|---|---|---|---|---|---|
| 7/1 | 315,859 | 30.0% | 410,617 | 221,101 | 30.0% |
| 7/2 | 535,796 | 26.0% | 675,104 | 396,489 | 26.0% |
| 7/3 | 714,223 | 22.0% | 871,352 | 557,094 | 22.0% |
| 7/4 | 932,678 | 18.0% | 1,100,560 | 764,796 | 18.0% |
| 7/5 | 1,121,066 | 14.0% | 1,278,015 | 964,116 | 14.0% |
| 8/1 | 1,281,118 | 11.0% | 1,422,041 | 1,140,195 | 11.0% |
| 8/2 | 1,422,613 | 8.0% | 1,536,422 | 1,308,804 | 8.0% |
| 8/3 | 1,585,306 | 5.0% | 1,664,571 | 1,506,041 | 5.0% |
| 8/4 | 1,661,288 | 3.0% | 1,711,126 | 1,611,449 | 3.0% |
| 9/1 | 1,781,191 | 0.0% | 1,800,000 | 1,745,567 | 2.0% |
| 9/2 | 1,800,000 | 0.0% | 1,800,000 | 1,800,000 | 0.0% |

1) Ideal catch is based on 1985-88 average sales slip catches.
2) Week 7/1 is July 1 to 8.

Figure 1. 1989 Chinook Conservation Closures.

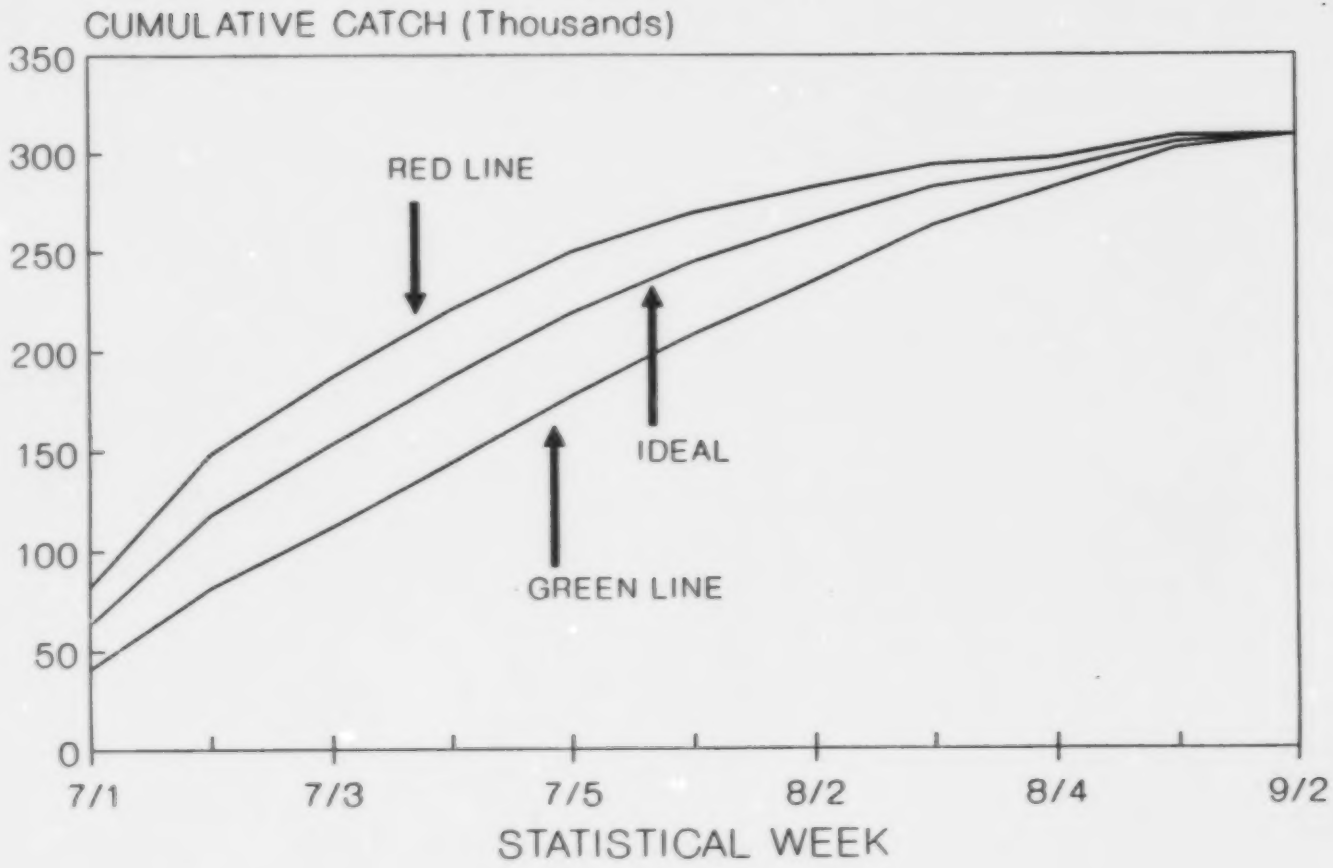



KEY

| | | |
|---|---|---|
| A | Chinook Conservation Area | A |
| B | Chinook Conservation Area | B |
| C | Chinook Conservation Area | C |
| D | Chinook Conservation Area | D |
| E | Chinook Conservation Area | E |
| F | 960 Line | F |
| G | Chinook Conservation Area | G |
| S | Swiftsure Bank Closure | S |

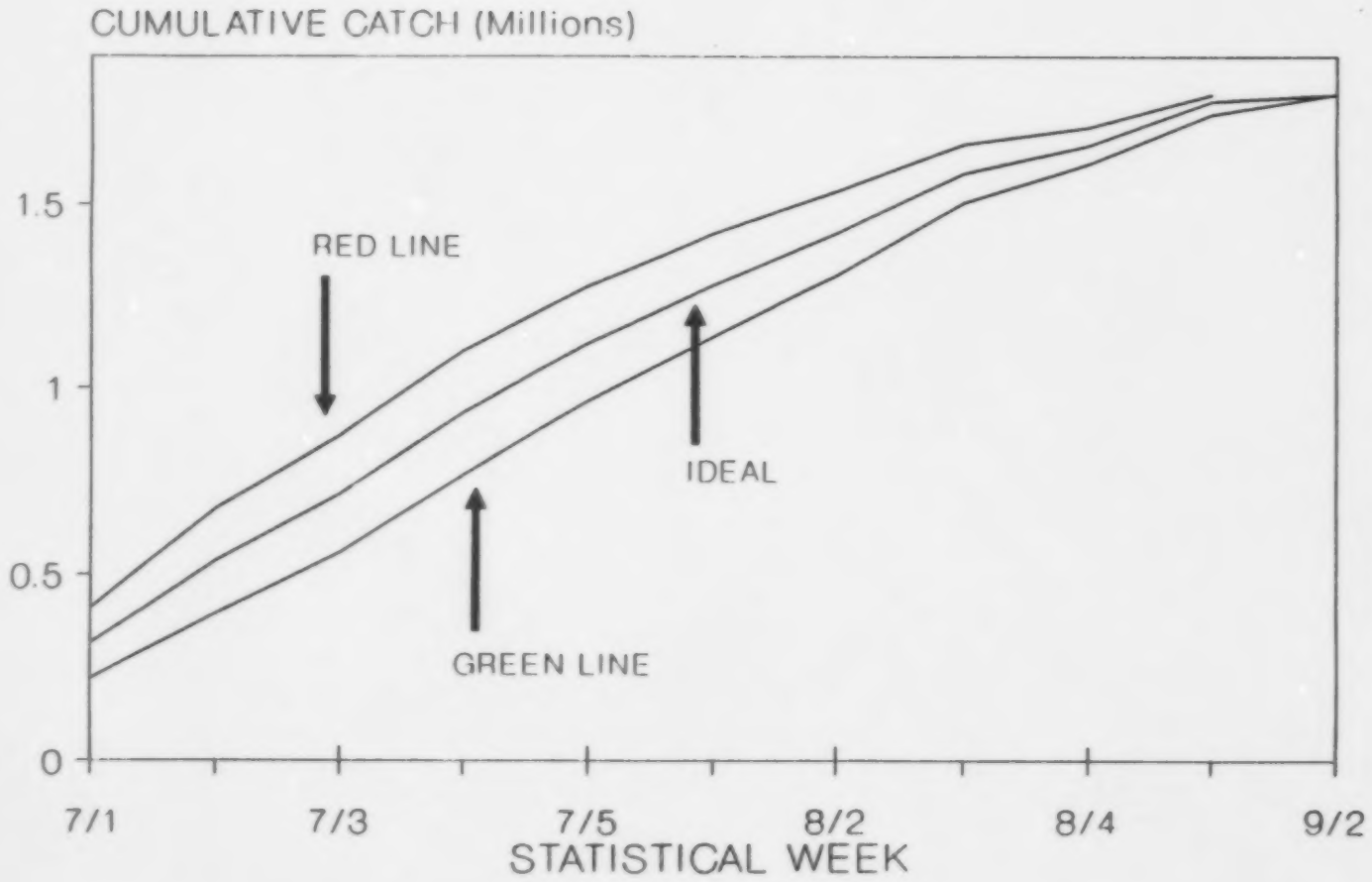
# WCVI TROLL CHINOOK

**Figure 2.** **1989 Red and Green Line**

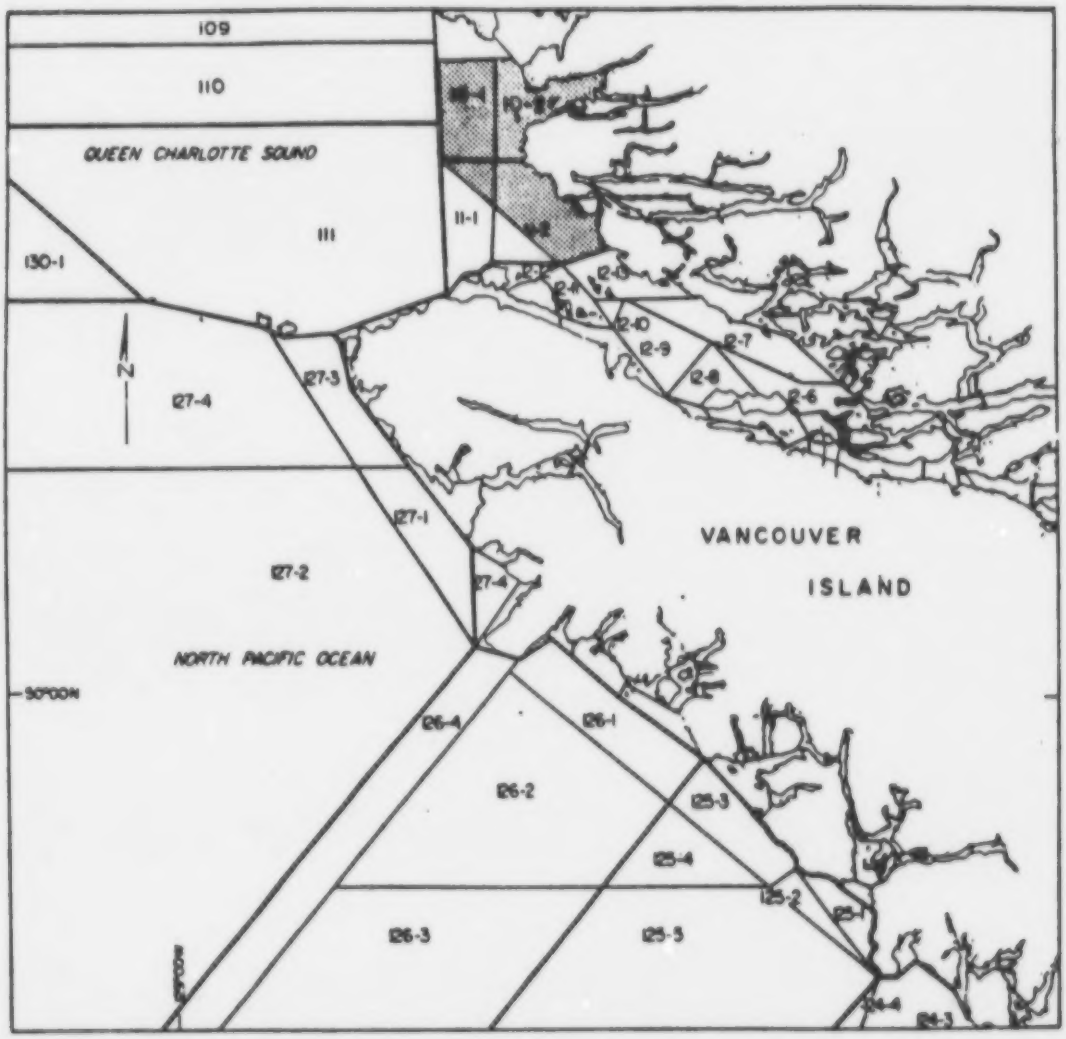


# WCVI TROLL COHO

**Figure 3.** **1989 Red and Green Line**



# Figure 4. Area 10 and 11 Closures.




NOTE: The shaded area shows the closed portion of Areas 10 and 11. These areas are closed for the conservation of Lower Georgia Strait chinook. A catch ceiling of 21,000 is in effect in 1989 for Areas 111, 110, 11 and 10.

GREY AREA:

Area 12 - As of July 1, 0001 hours, trolling for chinook and coho only is permitted in Subareas 12-10 and 12-13 (Deserters Group) 7 days per week for both Inside and Outside licensed vessels. In all other Subareas trolling is restricted to net fishing times and areas for both Inside and Outside licensed vessels. There will be non-retention of chinook for vessels with Inside licences. Troll fishing opportunities in Subareas 12-10 and 12-13 will be restricted if the chinook troll catch in all Area 12 exceeds 5,000 pieces.

NOTE: AFTER RESPECTIVE SPECIES QUOTAS ARE TAKEN, THE RETENTION AND POSSESSION OF THOSE SPECIES WILL BE PROHIBITED PURSUANT TO SECTION 5.2 OF THE B.C. FISHERY (GENERAL ) REGULATIONS AND 5.2 OF THE PACIFIC COMMERCIAL SALMON FISHERY REGULATIONS. SUBSEQUENT TO RECENT COURT DECISIONS, D.F.O. WILL ENFORCE THESE SECTIONS.

## NORTH COAST

The North coast fishing plans have been developed through a series of meetings with the Outside Troll Advisory Committee which is composed of representatives of the Northern Trollers Association, the Pacific Trollers Association, the UFAWU, Native Brotherhood, and the processing industry.

## OBJECTIVES

The troll fishing plan for 1989 was developed based on the allocations, limitations and assumed abundances outlined above with consideration of the following objectives.

1) Minimize non-retention fisheries and the impacts of associated mortalities.

2) Maximize the opportunities of attaining allowable catches for species with quotas, without foregoing fishing opportunities and catches of other species.

3) Maintain or increase the economic benefits to the troll fleet under the current limitation.

4) Minimize the disruption of coastal communities, or a specific segment of the fleet.

5) Contribute to the Lower Strait of Georgia chinook conservation program.

6) Manage Northern and Southern areas as a co-ordinated unit.

7) Maintain manageability and enforceability of the plan.

8) Manage in a manner that fosters a positive relationship with other gear types, and meets long term Pacific Salmon Treaty objectives.

ALLOCATIONS AND LIMITATIONS:

Sockeye

- Up to 5% of the Areas 1, 3, 4 and 5 all gear non-Fraser sockeye catch is allocated to troll.

- The North Coast catch of Fraser sockeye is included as part of the 10% coastwide outside troll allocation.

- If a large fishery develops in 2W that is targeting on Fraser sockeye, the lower 2W fishery will close before the coastwide Fraser troll allocation is reached (targeting is defined as a fishery where the daily Fraser sockeye catch rate in Area 2W exceeds 1% of the outside troll allocation of Fraser sockeye).

Coho

- There is no Pacific Salmon Treaty limit in the North Coast.

- Skeena coho are well below target escapement, and declining. Additional conservation actions are required.

Pink

Area 1

- The 1989 Area 1 pink troll limitations from the Pacific Salmon Treaty are the same as in 1988.

Closures to pink trolling:

A) In A-B line strip when catch in that area reaches 300,000 or by July 22 whichever comes first.

B) General Area 1 closure to pink trolling when total Area 1 pink troll catch reaches 1.7 million (with the SE portion of Dixon Entrance remaining open, subject to domestic management concerns).

Areas 2 through 10

- The North Coast, Area 2 through 10 troll pink catch allocation will be 4 percent of the Area 2 through 10 all gear pink catch (excluding Fraser River and other Southern bound stocks).

- The North Coast excluding Area 1 will close to pink trolling when the outside troll pink allocation of Southern bound stocks reaches 29%.

Chum

- No escalation of harvest rates by the troll fleet.

Chinook

- The 1989 North Coast troll catch of chinook is limited to 203,000 as part of the Pacific Salmon Treaty all gear catch ceiling of 263,000.

- The Area 10, 11, 110 and 111 total chinook troll catch is limited to 21,000 as part of lower Georgia Strait conservation measures (the 21,000 is part of the North Coast 203,000).

## ASSUMPTIONS REGARDING ABUNDANCE

| | | |
|---|---|---|
| Sockeye | - | Areas 1, 3, 4, 5 all gear catch is expected to be 1.5 million. |
| Coho | - | Skeena coho stock levels are expected to remain extremely low. |
| Pink | - | Areas 1 through 5 surplus expected to be 4,000,000 |
| | - | Central coast pink forecasts are very poor, except for Area 6. Conservation of Area 8 stocks in particular will be a concern for all gear types. |
| Chum | - | No assumptions regarding abundance. |
| Chinook | - | Assumed similar to 1987 and 1988. |

## NORTH COAST TROLL FISHING PLAN 1989

The following management areas will open to commercial trolling for all salmon species July 1, 1989.

### OUTSIDE SURFLINE

Open — Areas 101 through 110, 130-2, 130-3 and 142.

### INSIDE SURFLINE

| Area | Subareas Open |
|---|---|
| 1 | 1-1, 1-2, 1-3, 1-5 and 1-7. |
| 2E | All subareas |
| 2W | All subareas |
| 3 | 3-1 (subareas 3-2, 3-3, 3-4 and 3-7 are scheduled to open mid-August. |
| 4 | Closed |
| 5 | All subareas |
| 6 | 6-9, 6-11, 6-13, 6-17 and that portion of 6-10 seaward of a line from McPhee Point on Princess Royal Island to the southern tip of Campania Island. |
| 7 | 7-1, 7-2, 7-18, 7-19, 7-20, 7-23, 7-25, 7-26, 7-27, 7-31 and 7-32. |
| 8 | 8-1 |
| 9 | Closed |
| 10 | Those portions of subarea 10-1 and 102 lying North of a line due West from Dugout Rocks to the surfline. |

In addition, after July 1 trolling is open in net fishing areas during net fishing times until the troll season closes.

## SOCKEYE

The coastal approach to the management of Fraser sockeye will be continued in 1989. When the coastwide Fraser sockeye allocation is reached, the North Coast will close to sockeye trolling with the exception of the following areas (see Figure 5).

Areas remaining open to sockeye trolling:

1) Areas 101, 1-2, 1-3, 1-5 and 1-7 (all of Statistical Area 1 as opened July 1).

2) That portion of Hecate Strait outside the surfline, North of a line from Sandspit to Bonilla Island.

3) Subareas 2-1, 3-1, and all of Area 5 inside the surfline.

In addition, when or before the Fraser sockeye troll allocation is reached, Area 2W South of Buck Point, and subareas 130-2 and 130-3 will be closed to trolling. This closure will be implemented prior to reaching the outside Fraser sockeye troll allocation if the daily troll catch of Fraser sockeye in Area 2W, 130-2 and 130-3 combined reaches 1% of the Fraser sockeye troll allocation.

The North coast areas that remain open to trolling after the Fraser sockeye allocation is reached will be subject to closure for sockeye trolling if significant Fraser sockeye catches are recorded in these areas, or if the Skeena sockeye troll ceiling of 5% of the Area 1, 3, 4 and 5 total all gear (non-Fraser) sockeye catch is reached.

North Coast areas will not re-open if there is a South Coast restart due to run size upgrade (see South Coast plan).

## COHO

There are serious concerns for the conservation of Skeena coho. Additional conservation measures are expected to be necessary for 1989. Accordingly, Area 4 inside the surfline will close to trolling except during net fishing times in net fishing areas. If the troll fishery extends past August 25 subareas 4-1, 4-2, 4-3, 4-4, and 4-13 (and possibly other subareas) will reopen to trolling.

In addition, a two week closure will be implemented in the following areas if the Skeena coho return is poor as expected (see Figure 6),

1) All of area 104,

2) That portion of 102-1 North of 53 degrees 52 minutes (this is a continuation of the East-West line that divides areas 104 and 105).

If the boundary area that divides 101-10 and 104 causes significant enforcement problems the closed area will be expanded to include that portion of 101-10 East of 131 degrees 40 minutes (this is the North-South line running through the Rose Spit red can buoy).

The coho closure, if implemented, would begin some time in the period July 15 to August 10, to be decided by DFO.

PINK

Area 1 Pacific Salmon Treaty Pink Troll Arrangement.

The Area 1 Treaty arrangements remain the same as in 1988 (see Figure 7). In order to comply with the Pacific Salmon Treaty arrangement for 1989 the following areas will be closed to pink salmon trolling when the treaty catch levels have been reached:

1) When the pink salmon troll catch in subareas 101-4, 101-8 and 101-3 North of 54 degrees 37 minutes North and 103 North of 54 degrees 37 minutes reaches 300,000 or after 22 days (whichever comes first) these areas will close to pink trolling.

2) In addition, all of Area 1 (with the exception of the following areas) will close to pink trolling when the total Area 1 pink troll catch reaches 1.7 million. Areas that will remain open to pink trolling include subareas 101-6, 101-10, 101-7, 1-2, 1-3, 1-5 and 1-7.

Closures to pink trolling in a portion or all of Area 1 can be implemented at any time, if Skeena-Nass run strength is less than expected. The specific areas and dates of any closures will depend on pink catch distribution, effort levels and the abundance of returning Canadian and Alaskan pink stocks.

Other Pink Considerations

All North coast areas except Area 1 will close to pink trolling under either of the following circumstances:

1) If the Fraser pink troll allocation is reached.

2) If the troll catch of pink salmon in Areas 2 through 10 reaches 4% of the total all gear catch (Fraser and other Southern bound pinks excluded).

CHUM

No restrictions are anticipated. This does not preclude inseason measures if extraordinary conservation or allocation issues arise.

CHINOOK

The intention for management of the North coast troll fishery is to maintain the quality-economic base of the fishery and the opportunity to extend the season to harvest other species while minimizing the shaker fishery and the prospect of chinook offloading.

The closure of Area 2W south of Buck Point after the sockeye fishery will slow the North coast chinook catch rate. In addition, inseason decision points have been established that will trigger major area troll closures to slow the chinook catch. In 1989, the following area closures will be implemented when the 'redline' values are reached (see Figure 6).

Chinook Closures to Trolling

1) All of Area 2W.

2) Subarea 142-1, and 142-2 inside the 100 fathom line.

3) The area inside a box boundary approximately 2 miles from the West, North, and East shoreline of Langara Island.

4) Subarea 1-1 and those portions of 101-1 and 101-2 lying inside the 100 fathom contour.

5) Subarea 1-2, 1-7 and those portions of subareas 1-3 and 101-7 lying West of a line running due North through Cape Naden.

North Coast Redline Structure

The chinook closures to trolling outlined above will go into effect on the day the troll catch is projected to reach one of the following trigger points.

If the troll catch reaches 170,000 prior to July 30.
If the troll catch reaches 180,000 prior to Aug. 6.
If the troll catch reaches 185,000 prior to Aug. 13.
If the troll catch reaches 190,000 prior to Aug. 20.

After Aug. 20, closures would only be implemented if required to offer an extended season without chinook shaking.

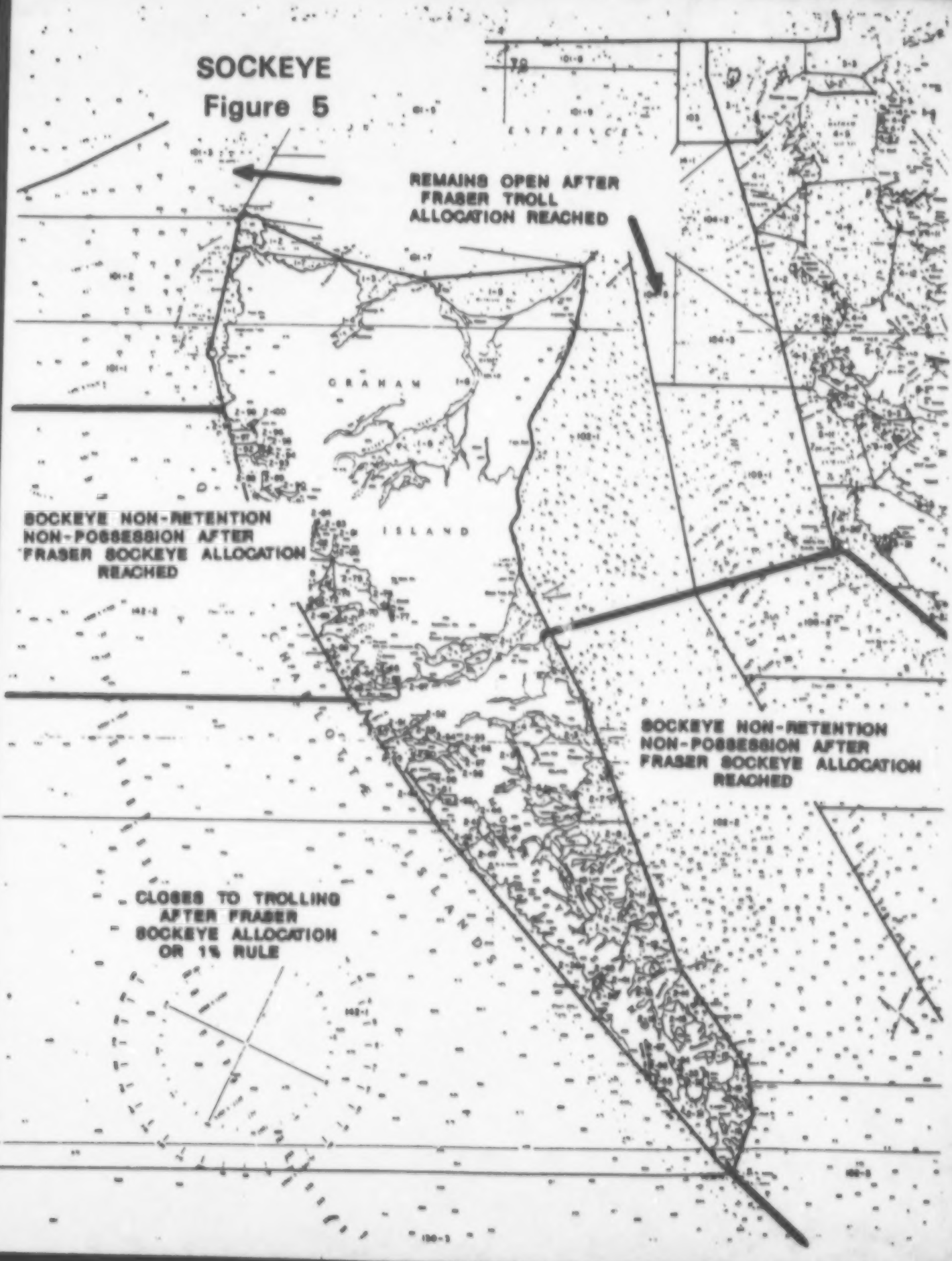
Lower Georgia Strait Conservation Measures

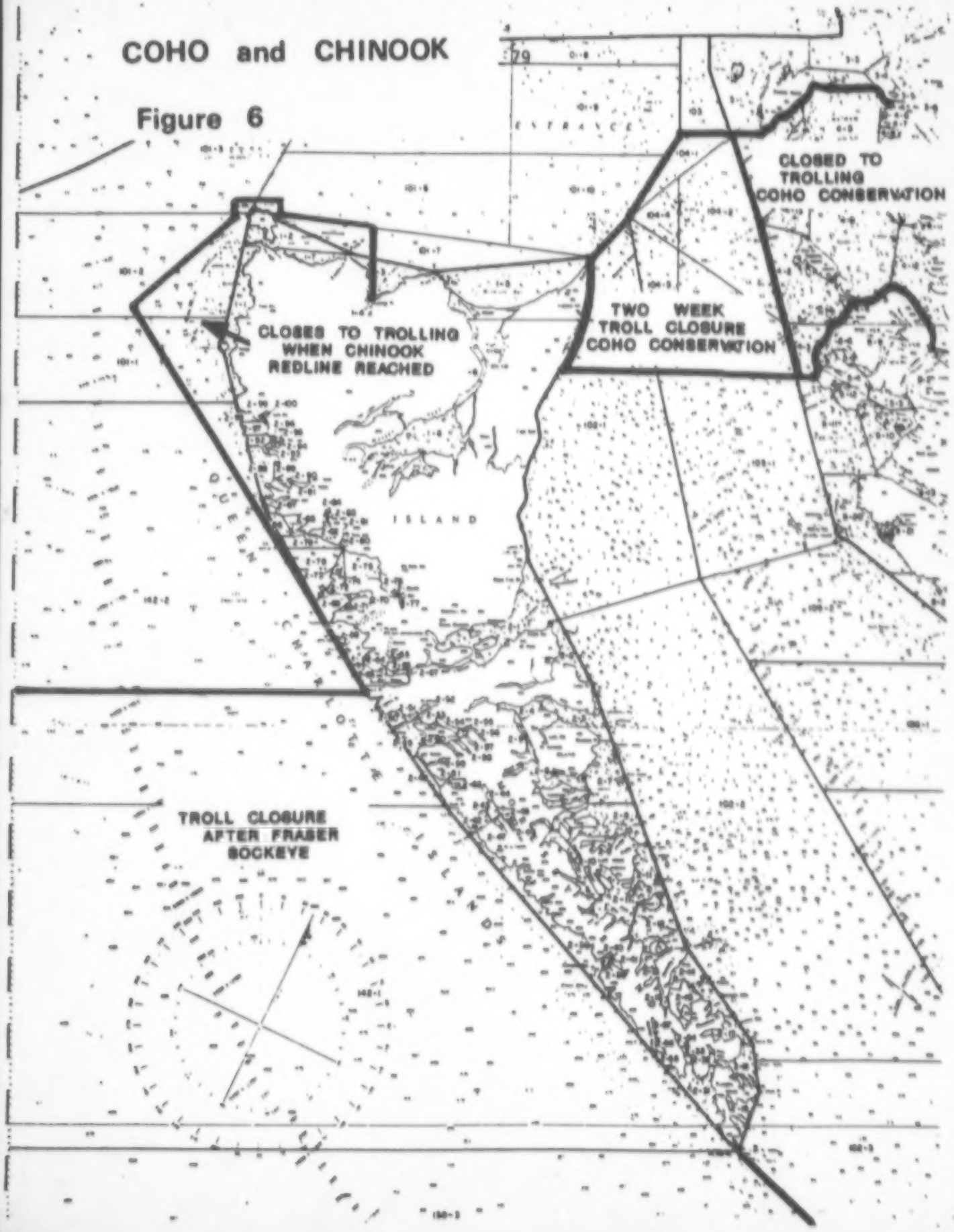
As outlined in the South Coast plan, the following portions of Areas 10 and 11 will be closed to trolling for the season (see Figure 4).

1) Those portions of subareas 10-1 and 10-2 lying South of a line due West from Dugout Rock to the Surfline.

2) Those portions of subareas 11-1 and 11-2 lying East of a line from the Northwest corner of Subarea 11-1, to Bright Island in the Buckle Group, then to the mainland following the Area 11 and 12 boundary.

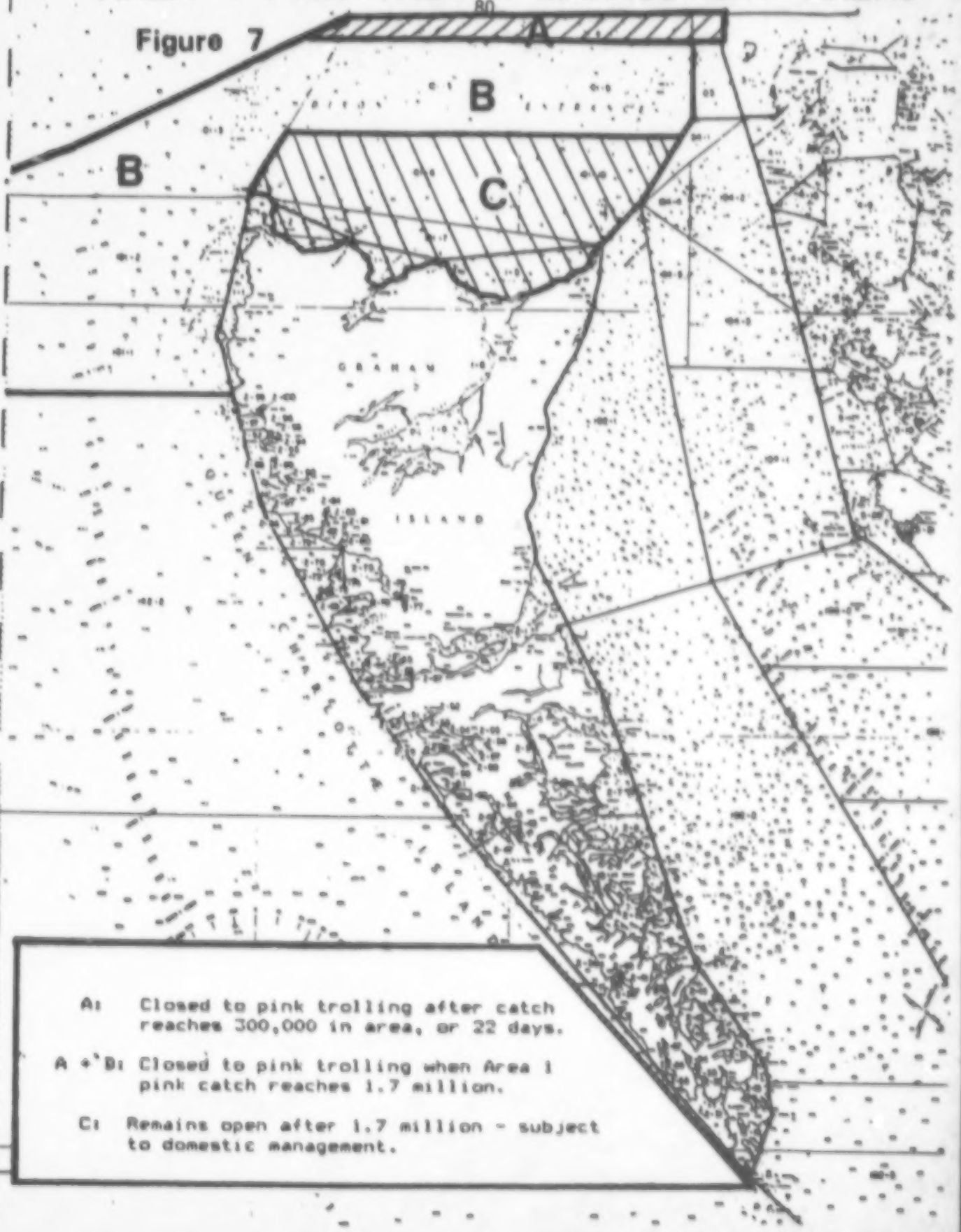
In addition, the Area 10, 11, 110 and 111 total troll chinook catch is limited to 21,000. The 21,000 is part of the North Coast ceiling of 203,000. If the 21,000 ceiling or the North Coast 203,000 ceiling is reached, non-retention and non-possession of chinook will be in effect in these areas.


SOCKEYE
Figure 5
REMAINS OPEN AFTER FRASER TROLL ALLOCATION REACHED
GRAHAM
ISLAND
SOCKEYE NON-RETENTION NON-POSSESSION AFTER FRASER SOCKEYE ALLOCATION REACHED
SOCKEYE NON-RETENTION NON-POSSESSION AFTER FRASER SOCKEYE ALLOCATION REACHED
CLOSES TO TROLLING AFTER FRASER SOCKEYE ALLOCATION OR 1% RULE


COHO and CHINOOK
Figure 6
CLOSED TO TROLLING COHO CONSERVATION
TWO WEEK TROLL CLOSURE COHO CONSERVATION
CLOSES TO TROLLING WHEN CHINOOK REDLINE REACHED
TROLL CLOSURE AFTER FRASER SOCKEYE

# AREA 1 PINK TREATY MANAGEMENT AREAS

**Figure 7**


80
A
B
B
C
GRAHAM
ISLAND
A: Closed to pink trolling after catch reaches 300,000 in area, or 22 days.
A + B: Closed to pink trolling when Area 1 pink catch reaches 1.7 million.
C: Remains open after 1.7 million - subject to domestic management.

# APPENDIX 4

## LIST OF OBJECTIVES FOR TROLL MANAGEMENT

Appendix 4. List of Objectives for Troll Management

1. Management plans must consider fleet equity (Day, Ice, Freezer, North/South). If possible, management actions should avoid disadvantaging any sector, any troll type, or coastal community.

2. Canadian troll fishing plans should ensure maximum benefits to Canadian troll fishermen.

3. Management plans should be coordinated for the North and South Coasts.

4. Fishing plans should minimize salmon non-retention fisheries for both adults and juveniles.

5. Fishing plans should minimize harvest of depressed stocks and provide opportunities to harvest surplus production.

6. Fishing plans should maximize landed value.

7. Fisheries should be managed in accordance with Canada/USA Treaty.

8. Fisheries should be managed in accordance with CFIC/PARC guidelines.

9. Fisheries should be managed in accordance with recommendations developed by OTAC.

10. Fishing plans should be enforceable.

11. Where possible and practical, closures and openings should be coordinated between species and between the North and South Coasts.

12. Where possible, fishing plans should minimize disruptions in traditional troll fishing practices.

# APPENDIX 5

## WEST COAST VANCOUVER ISLAND

## TROLL MODEL

# W.C.V.I. TROLL MODEL SIMULATIONS OF PRELIMINARY 19889 FISHING PLANS

The analysis described below evaluates the impact upon the W.C.V.I. troll fishery of changes to opening dates for each species, different levels of chinook abundance and the effect of proposed time and area closures. The outcome of the model calculations are listed in terms of expected catch (Areas 121-127) and the week in which the catch is reached. The major assumptions of the calculations are listed below.

1. 1989 Abundance

   - Chinook 20% less than 1987

   - Coho 23% less than 1987

   - Sockeye abundance according to PSC prediction of 13 million run size and average cycle diversion rate.

   - Pink abundance according to PSC prediction of 17 million Fraser River run size, 4.5 Puget Sound run size (B. Tweit WDF per. comm., 1989) and 1 million Study Area pink salmon (L. Hop Wo DFO per. comm., 1989) and 30% diversion rate.

   - Chum salmon abundance like 1980-1988 average.

2. 1989 Timing

   All run timings are like 1985.

3. List of simulations

   a. Base run - Open to all species July 1 until September 30 or on ceilings. Chinook abundance 20% less than 1987. Chinook size limit 67 cm.

   b. Same as Base run except that chinook abundance 10% less than 1987.

   c. Same as Base run except pink salmon non-retention during weeks 7/1 and 7/2.

   d. Same as Base run except pink and sockeye non-retention during weeks 7/1 and 7/2.

4. Results

a. Chinook

| Simulation | Catch | Week When Ceiling is Reached |
|---|---|---|
| a. | 271,800 | Not in season |
| b. | 300,500 | Not in season |
| c. | 275,100 | Not in season |
| d. | 266,400 | Not in season |

b. Coho

| Simulation | Catch | Week When Ceiling is Reached |
|---|---|---|
| a. | 1,800,000 | 9/2 |
| b. | 1,800,000 | 9/2 |
| c. | 1,800,000 | 9/2 |
| d. | 1,800,000 | 9/3 |

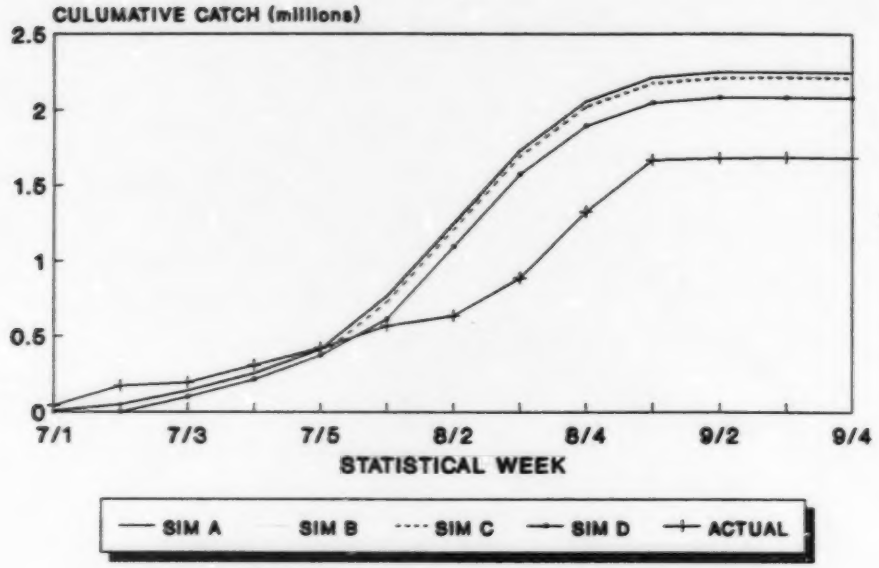
c. Sockeye

| Simulation | Catch | Week When Ceiling is Reached |
|---|---|---|
| a. | 706,000 | 7/5 |
| b. | 706,000 | 7/5 |
| c. | 706,000 | 7/5 |
| d. | 706,000 | 8/1 |

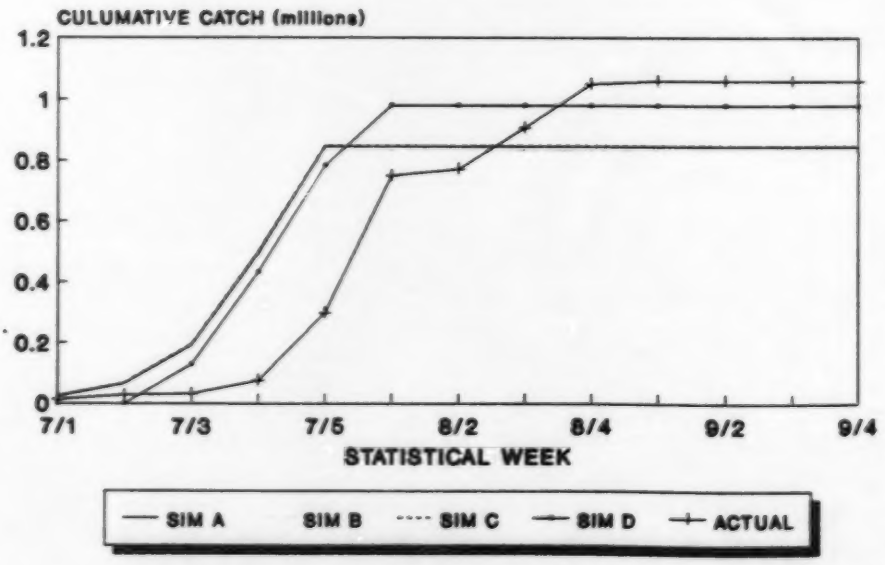
d. Pink

| Simulation | Catch | Week When Ceiling is Reached |
|---|---|---|
| a. | 2,250,000 | 9/4 |
| b. | 2,220,000 | 9/4 |
| c. | 2,210,000 | 9/4 |
| d. | 2,080,000 | 9/4 |

## WCVI TROLL MODEL SIMULATION 1989
### PINK

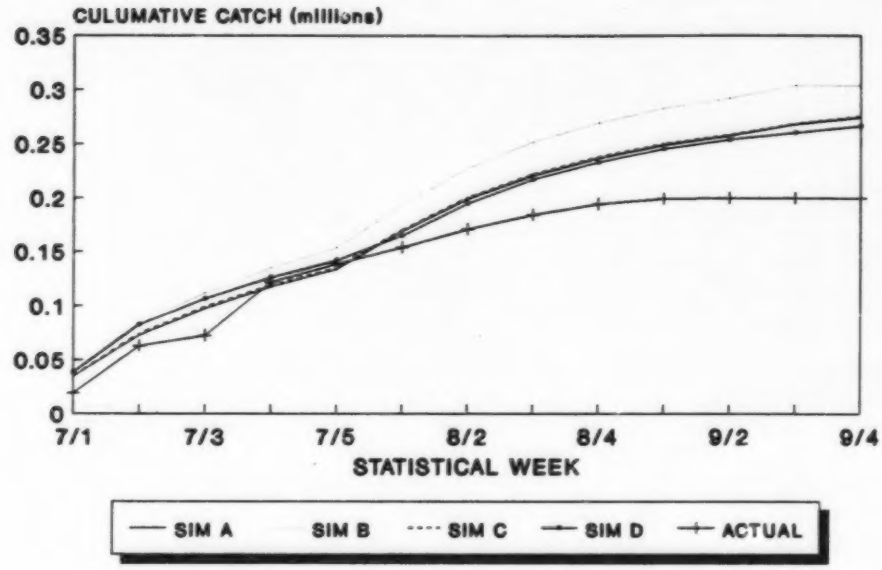



## WCVI TROLL MODEL SIMULATION 1989
### SOCKEYE

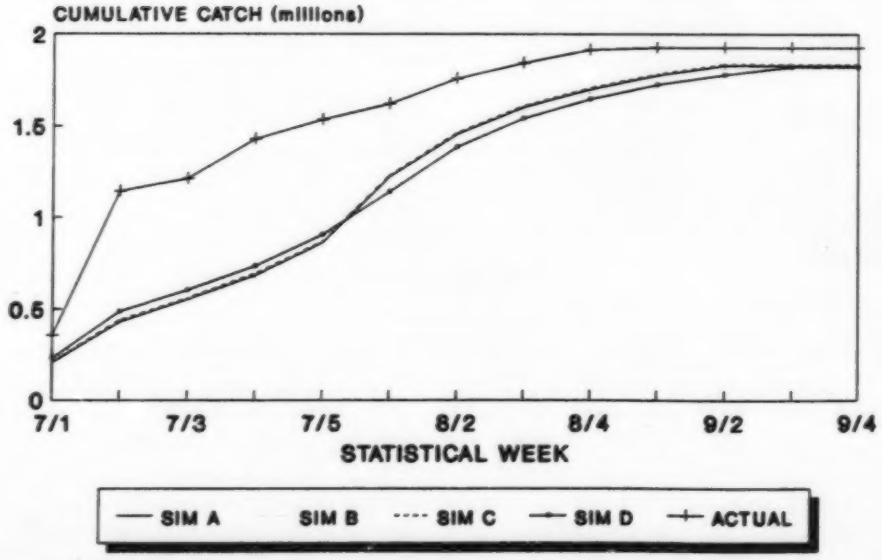



**See Appendix for simulation parameters**
**Actual Catch from B.C. Catch Stats, 6/90**

## WCVI TROLL MODEL SIMULATION 1989
### CHINOOK




## WCVI TROLL MODEL SIMULATION 1989
### COHO




**See Appendix for simulation parameters**
**Actual Catch from B.C. Catch Stats, 5/90**